MODEL AIRPLANE NEWS

An AIR AGE Publication

SEPTEMBER 1946
TWENTY CENTS

LUSCOMBE MODEL 10

* Out in California, Frank Hegemeyer has made a profitable full-time job out of his life-long hobby — hand-made reproductions of Early American and Colonial furniture.

IT'S A HOBBY—IT'S A BUSINESS!

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*AND in his work he finds X-acto hobby knives "of untold value". With the help of X-acto, Mr. Hegemeyer has filled his home with beautiful furniture . . . created material for his fascinating how-to-do-it articles . . . and had a whale of a lot of fun!

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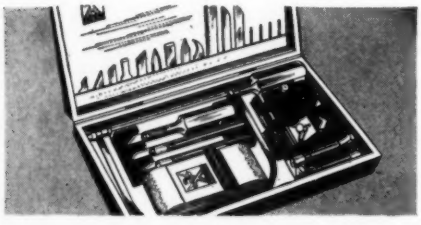
X-acto No. 2 Solid Duraluminum Knife . . . **50¢**
With 5 assorted blades, $1. Other X-acto Knives, Tools, Chests, 50¢ to $12.50.



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vibration proof fuel adjustment

A knurled sleeve with a friction lock for precise adjustment of the air fuel mixture is a newly added feature of the CANNON engine.

Vibration cannot shift or move the needle valve. The adjustment is positive. Each "click" of the spring indicates a change in the position of the valve. It's an important feature that adds to the pleasure of CANNON owners in flying their ships.

it's the mechanical details that make contest winners

300
(For Class B)
.750 Bore; .678 Stroke. Displacement .299 cu. in.; Wt. 6½ oz.; 5000 r. p. m. With 14" prop.
$19.75

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(For Class C)
.750 Bore; .812 Stroke. Displacement .358 cu. in.; Wt. 6½ oz.; 5500 r. p. m. With 14" prop.
$21.50

The omission of a single cooling fin or a minor defect in the shape and location of the exhaust port or design of gas tank can spell failure in racing contests—Performance is dependent on many small details of engine design.

CANNON performance is outstanding because of the attention given to details. Model plane fliers have told us in many letters that CANNON is amazing in its ability to pack tremendous power in its small displacement.

Its positive starting and trouble-free operation is a delight to many veterans who recall the tinkering of pre-war years. Visit your dealer, he will be glad to show you the many advanced features. The CANNON Manufacturing Company, Dept. B, 1878 East 18th St., Cleveland 14, Ohio.

GREATEST H.P. TO DISPLACEMENT YET ACHIEVED IN MODEL PLANE ENGINES

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THE MOTOR THAT LED THE FIELD WHEN WAR STOPPED PRODUCTION

Serving Aviation 18 Years

MODEL AIRPLANE NEWS

GEORGE C. JOHNSON, Publisher — JAY P. CLEVELAND, General Manager

SEPTEMBER, 1946 — VOL. XXXV, No. 3

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AN AIR AGE PUBLICATION

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FROM AVIATION oldtimers to the newest entrant into the business all of us may well be witnessing the passing of the airplane, as we know it, as a weapon of war, for truly the "Buck Rogers push button" aerial weapons are here! No longer simply the fiction of some distant future, missiles of incredible speed, hitting power and unerring accuracy are already a physical fact and their development is well beyond the preliminary stage. The Navy has permitted a brief glimpse behind the curtain on its guided missile program, which is being carried out by the Applied Physics Laboratory of Johns Hopkins University. The program is known as "Project Bumblebee" and includes such specialized phases as: propulsion, fuels, guidance, airframe, countermeasures, etc.

• ONE STAGE of the project has already reached an answer: the ramjet engine. This astonishing device consists of a hollow tube, nothing more! Although it weighs only 70 lbs. it has attained speeds of 1500 mph, nearly twice the speed of sound! This is the powerplant for the guided missile.

ARMY ORDNANCE Department has announced a high-speed metallic jet which spews a stream of disintegrating metal bits at a velocity of 25,000 fps at enemy missiles or aircraft. The new weapon consists of a shaped charge which proved so successful during the war in directing the explosive energy of a shell in a concentrated forward pattern, rather than in a conical or spherical pattern. By placing a steel liner in this shaped charge, the liner is blown to bits and driven forward at more than twenty times the speed of sound. This is the weapon for the guided missile.

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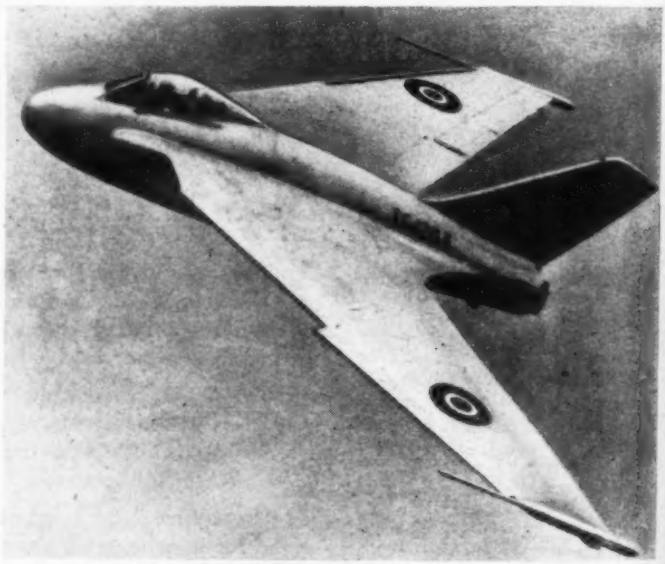
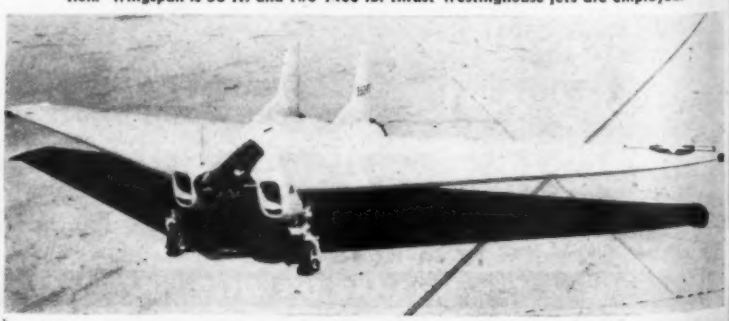


(Above) British De Havilland *Swallow* jet flying wing known as the D.H. 108 has standard *Vampire* fuselage, is strictly a research design (Below) Northrop XP 79, called the *Flying Ram*, has four wheel landing gear and pilot flies in prone position. Wingspan is 38 ft. and two 1400 lb. thrust Westinghouse jets are employed.



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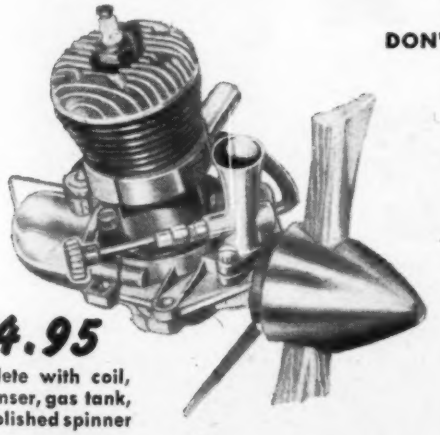
BOB CHILTON IS A TYPICAL "MAN OF THE AIR." Thousands of hours of flight time, years of practical and engineering experience, and a "first hand" knowledge of the trend of aviation qualifies him as one of the country's leading aeronautic experts. Mr. Chilton, in a recent interview, made the following statement. "AVIATION, THE WORLD OVER, IS ADVANCING FAR MORE RAPIDLY THAN MOST PEOPLE REALIZE. TODAY'S AIRPLANE IS ALREADY A MAJOR MODE OF TRAVEL AND AVIATION, IN THE FUTURE, HOLDS PROMISE OF UNLIMITED POSSIBILITIES. THE AIR-MINDED YOUTH OF TODAY CAN GAIN VALUABLE KNOWEDGE AND EXPERIENCE FROM PARTICIPATION IN BUILDING AND FLYING MINIATURE ENGINE POWERED MODEL PLANES."

THERE YOU HAVE IT! THE WORD OF AN AUTHORITY! And ***PHANTOM***, realizing this, has made every effort to provide YOU with an engine EQUAL TO THE TASK. The ***PHANTOM P-30*** operates on the same primary principle as a REAL AIRPLANE MOTOR .... Designed to give you practical experience and endless hours of TROUBLE FREE PERFORMANCE. Eight years ago ***PHANTOM*** established **3 WORLD'S RECORDS and STILL HOLDS THEM.** PROOF OF TOP QUALITY IN THE CHAMPION OF CLASS B ENGINES. DON'T BE SATISFIED WITH ANYTHING BUT THE BEST. FOR IMMEDIATE DELIVERY ORDER YOUR ***PHANTOM P-30*** TODAY! ***Fill out the handy coupon below and*** START TOWARD YOUR GOAL IN THE SKY!



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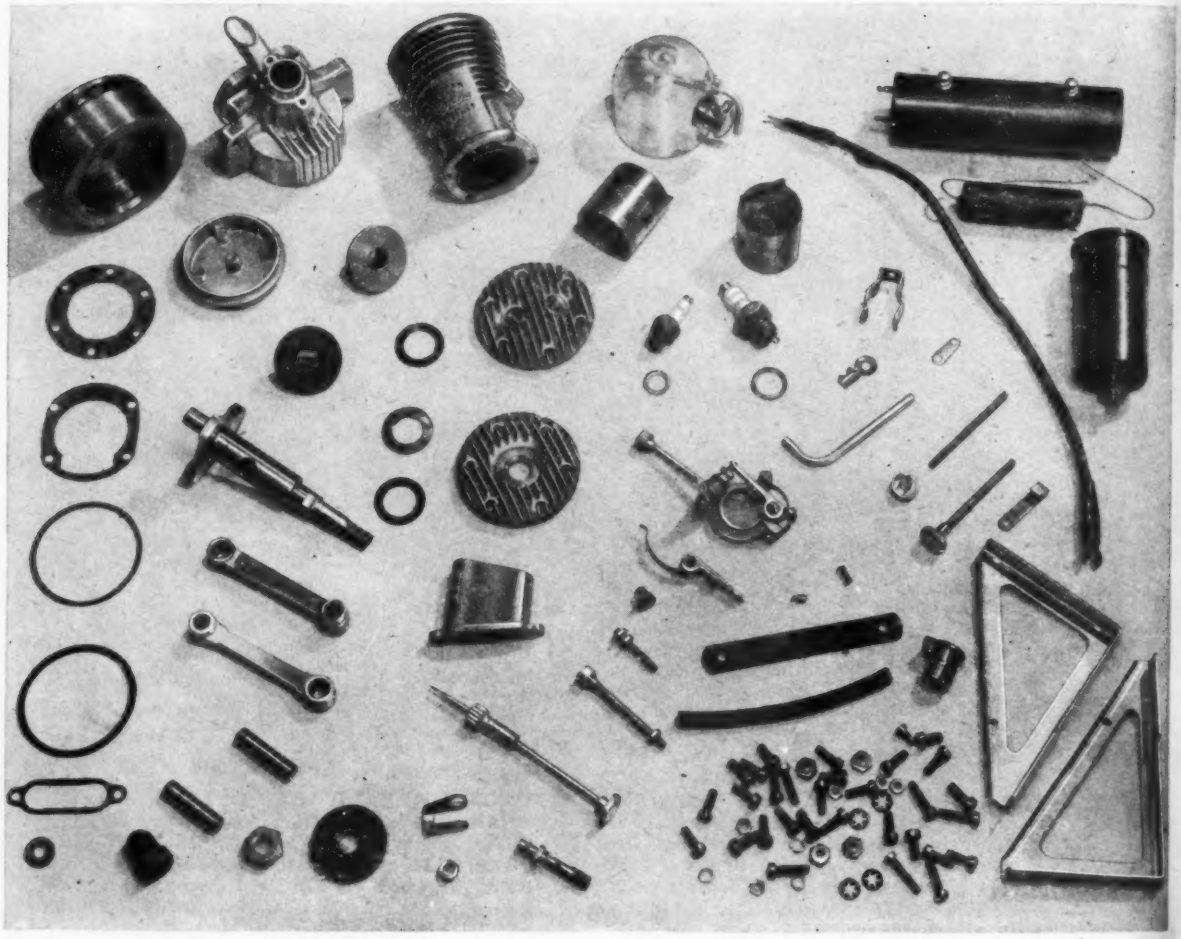

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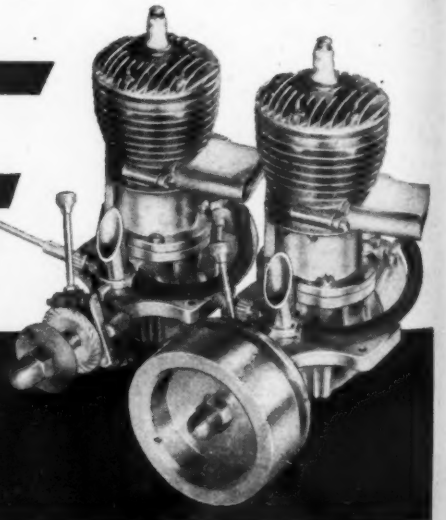

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Model Airplane NEWSLETTER

by AL LEWIS

DURING THE CURRENT competition season we imagine you have heard a great deal about rules and regulations and how models must conform to certain specifications and be flown in prescribed manner. Well, we want to tell you about an incident that happened not long ago when the rules were thrown to the wind—and for good reason, too. And with a suspension of the rules came a victory that was so startling that destiny seems to have taken a hand in the affair.

It all happened at the 17th New England Championship model airplane meet sponsored last June by the Jordan Marsh-Boston Traveler Junior Aviation League. For 17 consecutive years this club has been holding an annual two-day event which has attracted a long list of experts well known to the model aero world. Each year the indoor contest is run off in spacious Boston Garden, leading sports arena in New England. Since the inclusion of gas modeling the outdoor flying has been moved to the old Saugus, Mass. race track. It was there that our story was recorded.

To better understand the background it might be wise to review that section of the A.M.A. regulations pertaining to "Builder of Model." The rules state: "Each contestant shall assemble and cover all lifting surfaces and fuselages . . . only the builder may fly the model for record or in sanctioned competition . . . ."

In conjunction with the gas events of the New England Championship meet, representatives of the Academy contest board were asked if this regulation could be waived for one particular entry. Ordinarily, the answer would have been "no"—but this was no ordinary situation. It turned out that Contest Director Tom Wildon was making the inquiry at the request of the parents of a J.A.L. member who had recently been killed in an air crash while on active duty with the AAF. The late member's name was Arnold Rosenberg. Before the war, and before he entered the Air Force and became a pilot, Arnold had been one of the live-wire flyers of the League. He had traveled around to different New England contests and had achieved quite a name as a junior contestant. Now his dad wanted to have his ship flown in the New England meet. Arnold had built it especially for the contest and was all set to enter when he crashed while on a flight over Delaware.

Could the old "Builder of Model" rule be set aside in this instance? What would the contest board say? Right you are—board representatives gave full approval and okayed the model being flown by proxy. Selected to fly the Vagabond craft was Sidney Hamel of Mattapan, Mass., long time friend of the late flyer. So, in addition to competing with his own craft, Sid flew his buddy's ship and flew it well. As a matter of fact, the total time of 507 seconds which Sid turned in with the Class C model bettered his own times—and the time of everybody else in the contest! Yes, Arnold Rosenberg's model won first place in the Class C category against some of the stiffest competition in all New England.

We can't help but think that destiny stepped in here, helping maybe just at the right moments with a thermal or two, or maybe holding down the wind a little, for it was an exceptionally windy day for flying.

So today a magnificent trophy stands proudly on the mantlepiece in the Rosenberg home. A trophy which was won by an outstanding flyer with the help of an old friend. We think the rule makers will agree with us that there is always a time for moderation; that rules were made to be interpreted and in this one instance exactly the right decision was made.

* * *

ONE OF THE most fascinating forms of model building is R.O.W. flying. For those unfamiliar with the term, we mean Rise-Off-Water events. There has always been some little interest in this activity, but of late a lot of the lads have been getting wise and combining a day at the beach with a day of gas modeling. Result: a fine time for all.

Take for instance the Brain Busters club down at Hampton, Va. This group is made up of N.A.C.A. modelers mainly and includes some mighty good flyers. On Sept. 15 the club will run its 4th annual championship battle and this time will make it an all-water event for both rubber craft and free flight gas models. We are particularly interested in this type of flying since we believe it takes real good design, both for floats and model, to get a gas job off the water by itself.

Some of the pictures and movie films that have been taken at R.O.W. affairs are priceless. The Virginia meets always produce some lulus. Bill Effinger of Berkeley Models has some footage of Metropolitan (N.Y.C.) Model Airplane Council water contests in the New Jersey lakes region that are funnier than a Disney short. Shots of some

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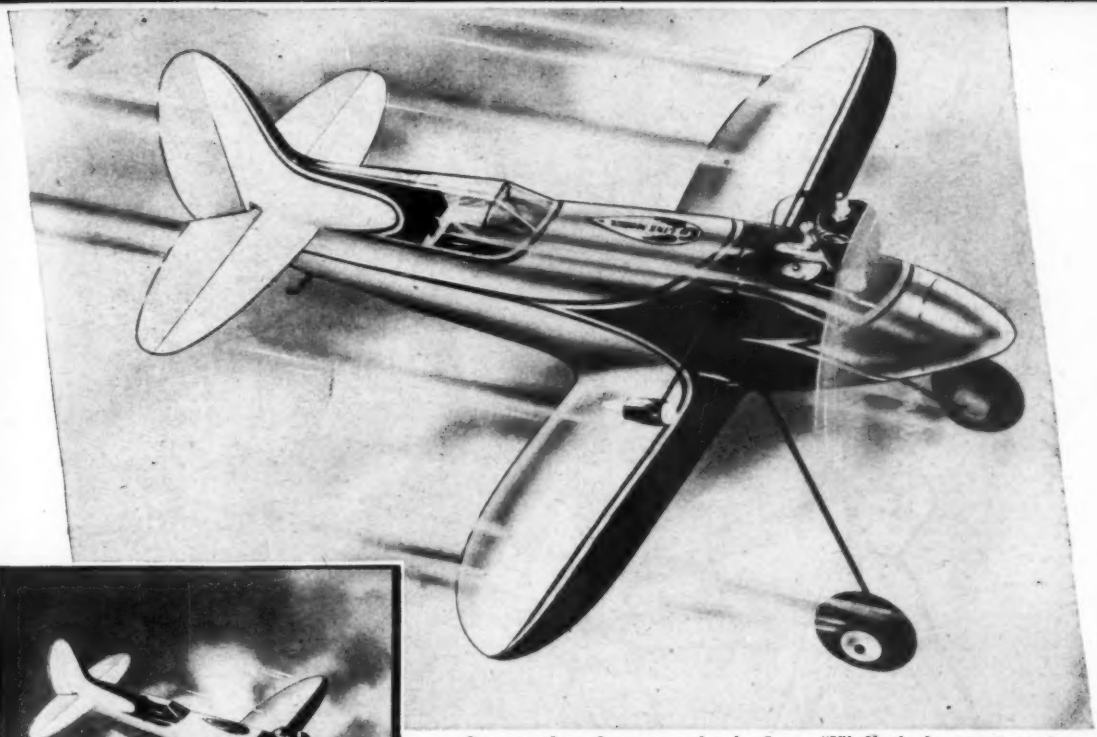
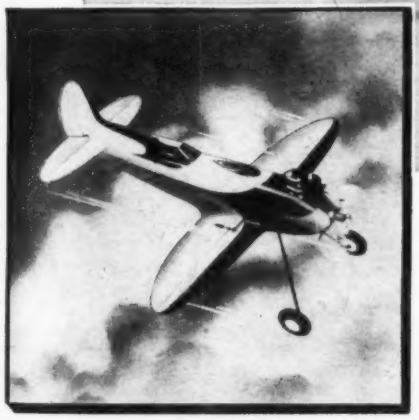
RACY · RUGGED · and FULL of FLIGHT...
STANZEL *Super* "V" SHARK





Super-sturdy and super-speedy, the Super "V" Shark deserves its rating as the best speed-and-stunt model for Class "B" and "C" motors. The streamlined, G-line Super Shark hits a phenomenal 120 m.p.h. and features the new, improved Roller Control. Built of balsa, with hardwood and plywood reinforcing stress points, the model's durability is increased by an all-steel landing gear.

$4.95 PLUS 30c POSTAGE

THE BABY "V" SHARK

This remarkably perfect model is designed for Class "A" and "B" motors and is sturdily constructed of balsa, hardwood and plywood, with an all-steel landing gear. Boasting a 20-inch wingspread, speed in excess of 100 m.p.h. and championship performance, the Baby "V" Shark is an ideal G-line model for a beginner. $2.95

PLUS 25c POSTAGE

STANZEL MODEL CONSTRUCTION KITS

include everything needed . . . ample supplies of carefully selected balsa, plywood, hardwood, cement, dope, music wire, screws, etc. Also complete plans and instructions for building and flying. Your favorite model dealer features these kits.

100 FEET STEEL G-LINE 50c

THE INTERCEPTOR

A gracefully streamlined Class "B" Free Flight Model of strong climbing qualities, the Interceptor has an unusually flat, lingering glide. Wing span — 52 inches . . . simple to construct . . . easy to fly.

$2.98

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THE TIGER SHARK

Especially designed for Class "C" motors, this single line model is recommended to those not interested in elevator control. Unusually stable, with large wing area, the Tiger Shark performs perfectly in flight. Simple to construct . . . easy to fly.

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- **DISPLACEMENT:** .30 cubic inch. Bore .711. Stroke .750. Weight 7 ozs.
- **CYLINDER:** Steel alloy, broached and honed. 180° exhaust, double ported.
- **CRANKSHAFT:** One piece steel alloy, heat treated and ground. Timing cam ground on shaft.
- **PISTON:** Meehanite, ground to 5 RMS finish with skirt relief. Tapered fuel transfer permits greatest vapor expansion to top of piston.
- **BEARINGS:** Naval bronze for both crankshaft and connecting rod.
- **CONNECTING ROD:** Aluminum alloy die cast. Upper end attached to piston by Naval bronze wrist pin.
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MASTER PLASTIC CRAFTSMAN SET $2.00

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1/8 x 3/16	.02½
1/8 x 1/4	.03
3/16 x 3/16	.03
1/4 x 1/4	.04
1/4 x 1/2	.08
1/8 x 3/8	.04
1/8 x 1/2	.05

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1/32	.08	
1/16	.08	.12
3/32	.10	.15
1/8	.12	.19
3/16	.16	.20
1/4	.18	.25

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1/2 x 2	.25	.40
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1 x 1	.25	
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8"-9"-10" ..... 45c 12"-13" 60c
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12"		65c	65c

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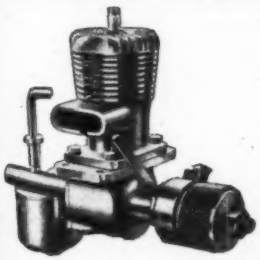

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WEST COAST TIPS

By JOHNNY DAVIS

WESTERN model builders are going to enjoy what we have to tell them this month.

The Los Angeles Junior Chamber of Commerce, in conjunction with United Air Lines and Aircraft Manufacturers of the West Coast, are sponsors of a combination contest in Los Angeles and surrounding districts for four days: August 23-24-25-26. This contest will be sanctioned by A.M.A. and also sponsored by Model Builders Assn. of Southern Calif., which is a new organization composed of practically all the model clubs in and around Los Angeles.

We might as well tell you the whole story as it reveals how Los Angeles model builders managed to climb out of the state of confusion that has long existed. It also gives a good insight into the growing pains of a hobby that is fast becoming America's No. 1 time-killer, the painless way.

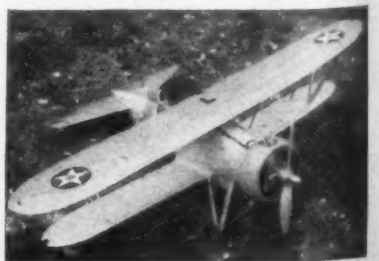
Don Newberger holds trophy won by his record speed of 126 mph set at Santa Monica (AMA sanctioned) meet. With him are Fred Schrott and Bert DeVere, makers of the McCoy engine used in Don's record breaking ship which DeVere is holding

For the past several years there have been many different aspects to the hobby pastime on the coast, particularly in Los Angeles, due to the many and varied interests of the sport. For example, take free flight. Due to weather conditions here, model fans years ago rebelled against the official length of motor run because of the extra long flights that made it nearly impossible to keep a good flying model for more than a few flights. Wing and power loadings went up and motor run was cut down in an attempt to save models for future contests. Then the ugly pylon reared its head and the factions, already divided between national and western rules, took another division between those in favor of pylons and those in favor of a semi-scale appearing model or at least one of conventional appearance.

When Jim Walker developed U-Control we immediately had different ideas about how to put it to use. Please don't misunderstand us. It would sure be a dull world if everybody did everything alike. Diversity of ideas is healthy and should never be checked in any way. *But*, the typical way in which these different ideas were promulgated was for one group of modelers who thought their way best to gather together and hiss at another group who thought *they* were on the right track; and the second group would hiss right back. The whole business made a fan who liked any and all kinds of model building a little bewildered. He

(*Turn to page* 14)

There are over 175 pieces in the top wing alone of this beautiful Boeing F4B4 control liner built by Cedric Galloway of Burbank. It has complete interplane wires, working lights and many other details, but is still a fine flyer.



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Megow Zombie	3.00
Megow Aero Champ	2.50
Banshee	6.95
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Add 25c for Packing & Post.

U-CONTROL

Short Snorter	$ 2.95
Aero Puppet	5.95
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Scientific-Cyclone	4.95
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Falcon	.50 up
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Leddy Amphibian	2.50
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RUBBER POWERED

Cleveland	$1.00 up
Megow	.25 up
Scientific	.35 up
Comet	.25 up
Green Hornet	.50
Kaydet	.25
Shooting Star, Ryan Fireball, Globe Swift, Stinson	1.00
Capitol	.65 up
Berkeley	1.25 up
Eagle 4-1 Series	1.00
Modelcraft	.25 up
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GLIDERS

Berkeley Sinbad	$1.25
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Cleveland	.50 up
Scientific	.25 up
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Burgess Penlite Batteries...2 for	.15
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ERCOUPE

$7.50

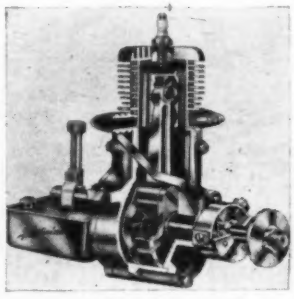
less engine
40" wingspan
add 25c for postage

A Real **JET** *Engine!*

$35.00

Add 25c for Packing & Post.

This MINIJET engine is the real thing, modeled after the famous V-1 Buzz Bomb engine. The Minijet is 27" long and 2" in dia. Weighs 16 oz. Burns gasoline—2 oz. per minute. Develops more than 2 lb. thrust. It can be used as the fuselage with surfaces attached directly to the engine's body.



FLEETWIND Engine $24.75

A precision-built engine that has plenty of speed and power. Ruggedly constructed for long service.

A Real Power House
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Standard $19.50
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Arden P-099	$19.50
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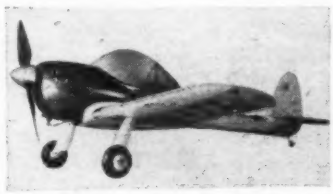

Piper Skycycle $7.50

less motor. Add 25c for Postage

This beauty (a Capitol Model) is patterned after its big brother recently introduced by Piper. Your collection is not complete without the Skycycle.

54" Wingspan

Comet Zipper 'B.' $5.95

An all-balsa model for "B" engines. An excellent free-flight performer. 54" wingspan. Add 25c for postage.

CONSOLIDATED TARPON $10.75

Less Motor
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A thrill on the line! Requires sanding only to complete. Has speed, stability and maneuverability. Try your new Fleetwind in this one.

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Drawing Board, Easel	32.50
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9"	.75
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DEALERS: Large or small, whatever the size of your order, we shall be glad to supply you. Orders will receive immediate attention. You will be allowed the usual discounts. Show rooms open daily, except Wednesday afternoons. Dealers invited.

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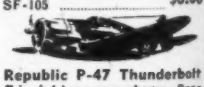
Famous AAF fighter. Span 28⅛". MFM Kit SF-77 ..... $3.00



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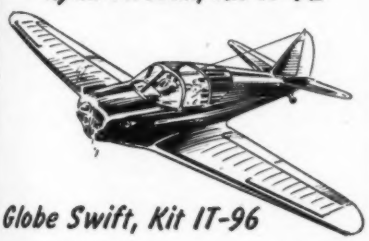

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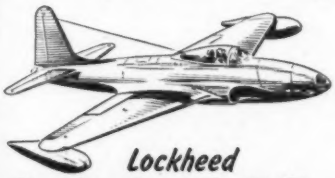

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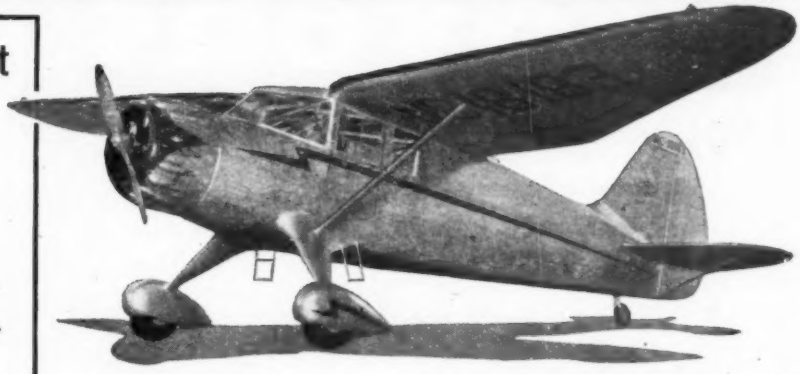

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3 Ft. "T" Models

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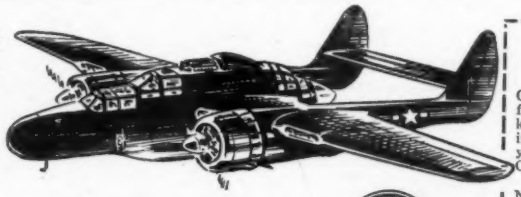

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Clip and fill out this coupon and take it to your favorite hobby dealer. If he does not have these kits in stock, ask him to order them for you, giving him this coupon as a reminder to get them for you promptly. Do not accept substitutes for CLEVELAND kits under any circumstances.

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I am interested in the following CLEVELAND kits:

Price $..... No..... Name.....
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didn't know whose toes he was going to step on next. Due to the fact that more and more people were being drawn into the hobby it had assumed so many aspects that even the clubs that were sold on one idea had divided factions among themselves and club meetings usually ended in bitter arguments.

Two years ago an attempt was made to standardize the rules then in existence with reference to safety-first and motor displacements for free flight and control line flying. At a meeting in Griffith Park Auditorium practically every interested model builder attended or at least was represented. The purpose of the meeting was to draft a set of rules to be used in a forthcoming meet at an Army base adjacent to Los Angeles and in which practically all the Los Angeles clubs participated. This was to be an experiment to see how everybody liked the rules and if possible to standardize the rules for future meets so that model builders everywhere would know what goal to work toward. The meet was by and large successful, so from that time forward the rules for most meets have fallen into a pattern. However, the rules for this area did not agree with the rules from other areas and since each area thought they were right, the same situation mentioned at the beginning existed, only on a larger scale.

Some areas such as the Bay and San Joaquin Valley areas reconciled their differences and formed associations of model clubs to place a definitive control on their flying. This proved successful for the most part and is still in effect.

At a recent contest in Los Angeles, local fans were given a little food for thought by Roy Mayes, Pres. of Aero-Modelers Assn. of Northern Calif., who very thoughtfully brought with him and passed around a sizable supply of printed matter concerning bylaws, rules and benefits of A.M.N.C.

Things came to a head recently when the Los Angeles Jr. Chamber of Commerce and United Airlines casually mentioned they would like to underwrite a large model meet sometime this summer. At all times modelers, regardless of their belief concerning model building, have thought of Southern California as a hotbed for contests and the like and have always supported them to the hilt. So the statement by the Junior Chamber was greeted with considerable fervor and approval. However, the Jr. Chamber of Commerce made it known that they desired this to be a non-partisan meet with all model clubs taking part in it equally. That was a horse of another color. It threw it up to the model builders themselves to become united or else forget about the meet.

But they didn't want to forget about it, because a meet of the size desired by the Jr. Chamber would bring a lot of money into the treasury, and this money was to be used as the initial fund to set up a model foundation in Los Angeles which would benefit them all. The purpose of the foundation is to further the construction of flying fields and facilities, also to put pressure on the city fathers to realize that model building is a means of curbing juvenile delinquency and thereby getting their support in the interests of model builders. The foundation is to be administered by civic minded men themselves.

No, this was too good to miss. So now the Model Builders Assn. of Southern Calif. is fast becoming a fact and not a fancy.

More details on the Western Open as it will be called.

The contest is open to any resident of U. S. and possessions. There will be three major classes: Juniors, 16 years or younger; Seniors, up to 21 years; Open, over 21 years of age. Events will include: all indoor events, all free-flight outdoor, all R.O.W. events, all rubber power events, all control line events (including speed, precision stunt, flying scale, team stunt), special events (jets, rockets, etc.), radio control, and detail scale (non-flying).

Five to ten thousand dollars worth of prizes will be awarded. The grand prize or sweepstakes will be a four day, all expense paid, honor guest, trip to the Cleveland National Air Races on a United Airlines Mainliner.

There will be plenty of room for all out of town guests as model builders are throwing open their houses; other facilities are also available. This contest will undoubtedly be the largest ever staged west of the Mississippi River and may be the largest ever held anywhere. Out of town guests are urged to attend. For reservations and entries, announcements will be made through your local paper before this column hits the make-up room.

The Jr. Chamber of Commerce requested us to make a further statement with regards to this meet: "A contestant does not have to belong to any club or association local, national, or otherwise, to compete in this meet."

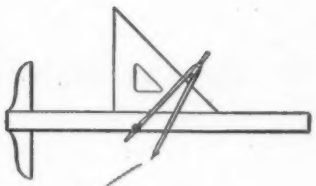
Let's get in and push, Westerners!

PHOTO CREDITS

Page
2 *Above*—Press Assoc.
Below—Acme
23 Thomas K. Cone
38 Robert C. Hare

Walt Schroder

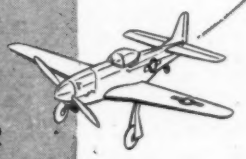
DESIGNER OF:
- DREAMER
- SCALE LINERS
  - P-51 MUSTANG
  - F6F HELLCAT
- WANDERER
- RUNT
- 4 WAY FLIGHT
  - ERCOUPE
  - PIPER CUB
  - MONOCOUPE
  - SKYFARER
- FLIGHT CONTROLLER
- CULVER CADET
- JERSEY JAVELIN
- ROAMER
- AND MANY OTHERS



Announcing

We are proud to announce that Walter Schroder, formerly the *Model Editor of Air Trails*, is now *Vice President* of the EAGLE MODEL AIRCRAFT COMPANY, Inc.

Mr. Schroder, who is one of the country's leading model designers, will direct our engineering staff in producing the finest and most advanced model kits for the model builders of the world.



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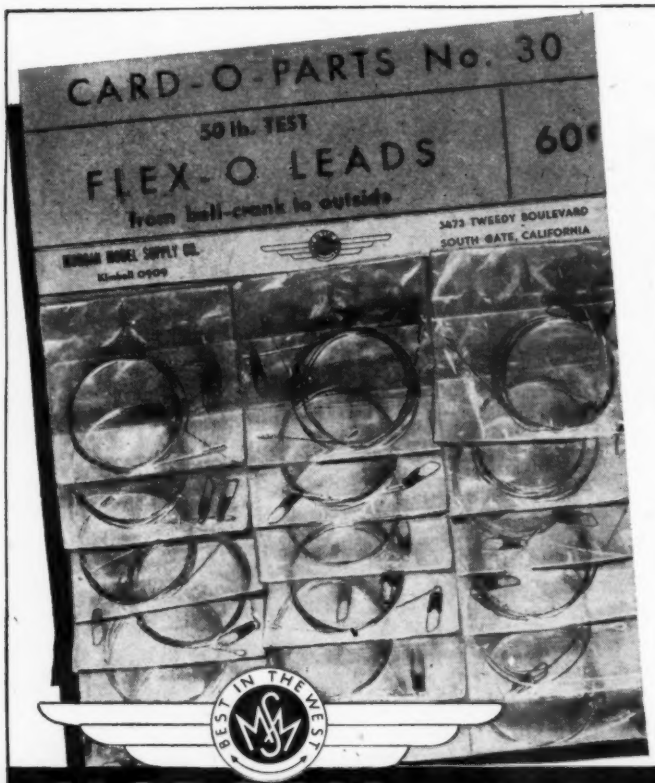

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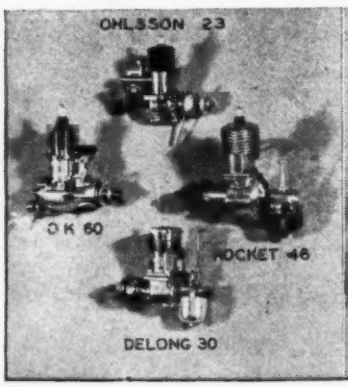

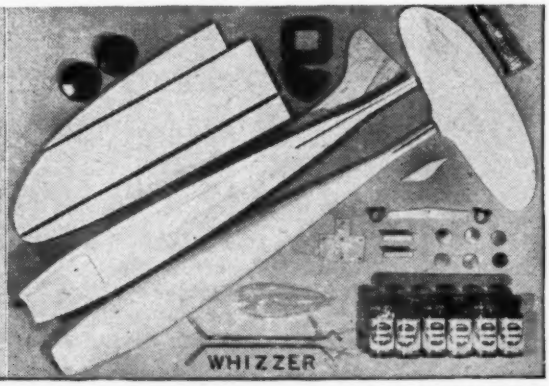

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THE COMET WHIZZER: One of the CLEANEST control line kits ever produced.
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Excellent climb and glide characteristics. Simplified time-saving construction, detailed plans. Formed landing gear, wheel, prop and battery holder supplied. Handles A or B engine. Span 50" $6.95

Postage **FREE** *Insurance* **PAID**

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•

CONTROL FLIGHT

TARPON	$10.75
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SCIENTIFIC CYCLONE	4.95

FREE FLIGHT

CAPITOL CUB CRUISER, 7 FT.	$10.95
ZOOMER	6.95
MERCURY	5.50
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Order by Mail Only. Enclose Money Order or Check. All Advertised Items in Stock.

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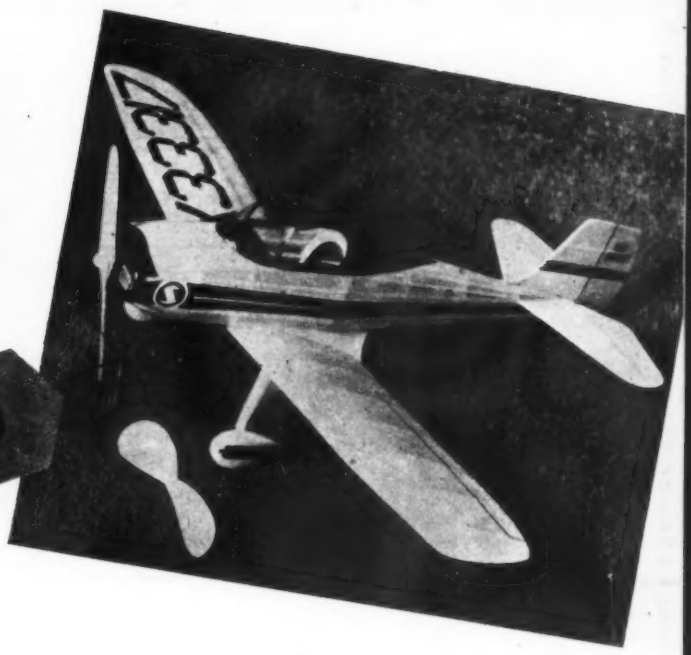
PLANE ON THE COVER

MODEL LUSCOMBE 10



By EARL STAHL

Build a flying scale model of this little sport plane that looks like a pursuit job

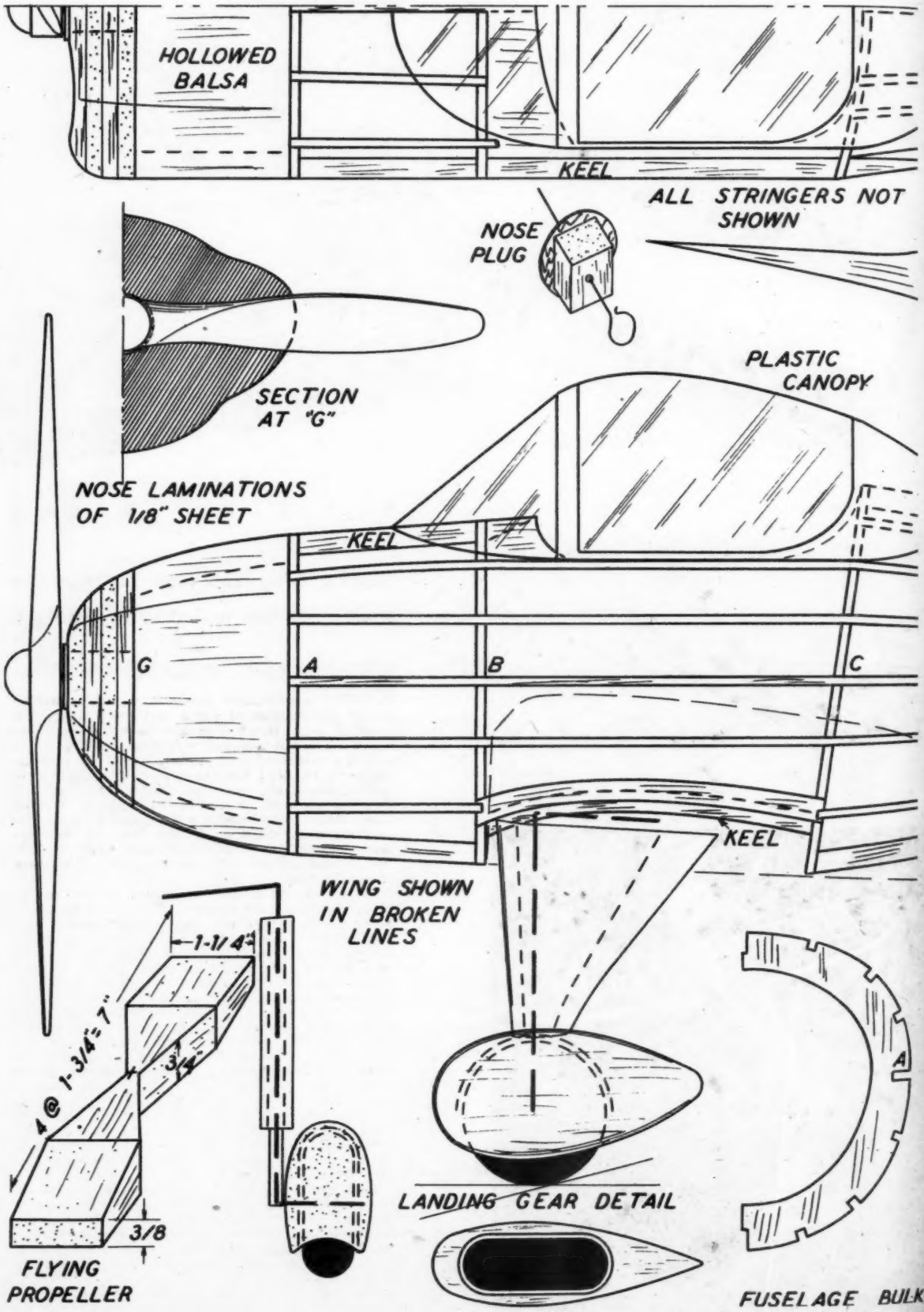
RECENT months have shown a revival in investigating potentialities of single seat sport planes, but whether or not they are to take their place in popularity beside the two and more place civilian models is still a matter of speculation. In the late twenties and early thirties a number of one place planes were buzzing around airports. These included the Buhl *Bull Pup*, several types of Heaths, Corben *Baby Ace* and *Super Ace*, Knight *Twister* and numerous others. The mushrooming popularity of *Cubs*, *Aeroncas* and *Taylorcrafts* soon, however, shoved these craft into the background and not until now has new interest been shown in them.

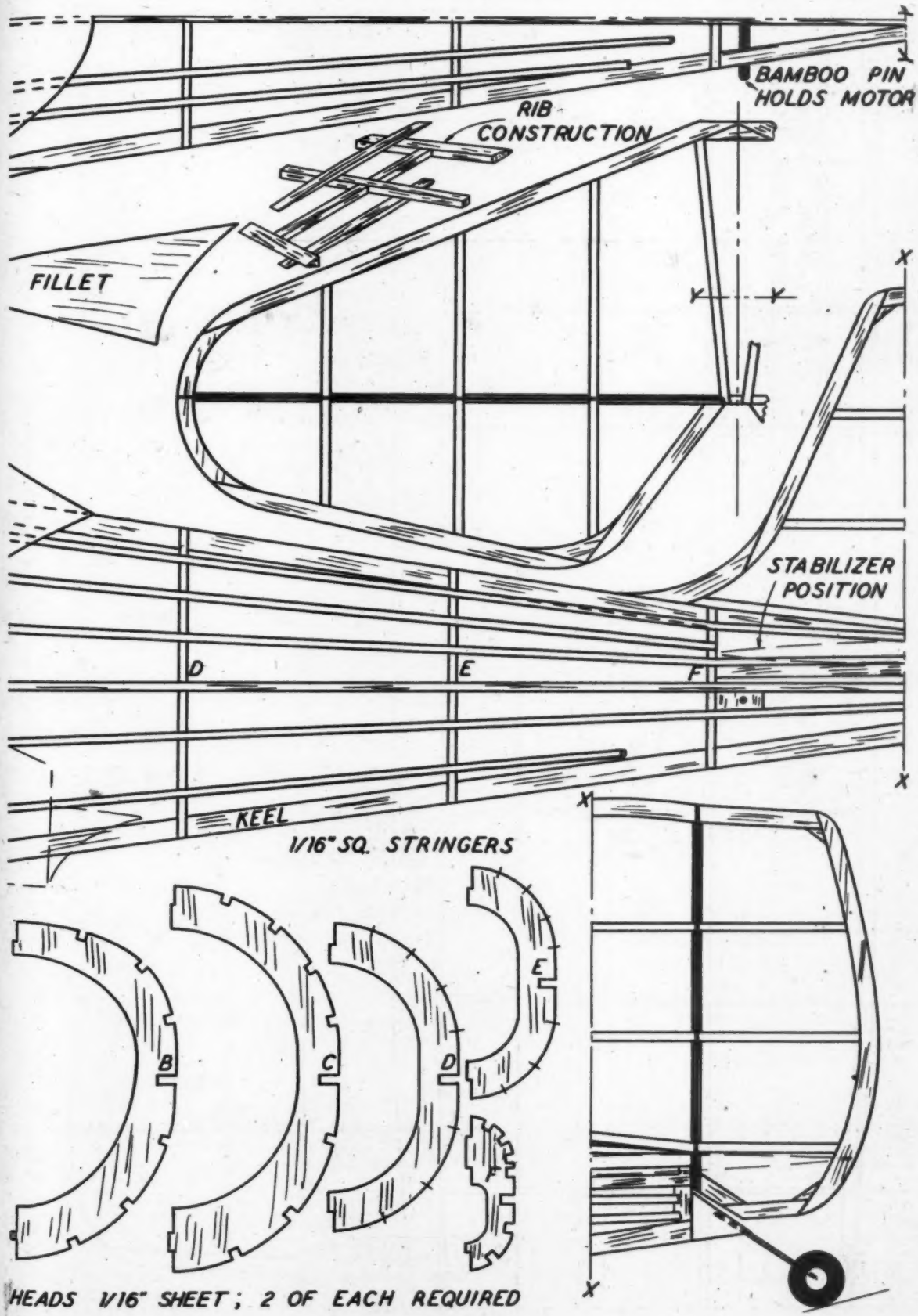
Several manufacturers are again looking to one place planes and the result of their investigations of performance possibilities and market potentialities may result in assembly lines for their production. Luscombe's experimental single seater is one of the most promising to be shown to the public. Using a regular 65 hp *Continental* engine, it is reported to have a cruising speed of more than 120 mph. . . . and that is really something! A plane of this type would be especially desirable for cross-country piloting because it would provide rapid transportation at very low cost. This Model 10 was fabricated largely from standard *Silvaire* parts which means that it surely inherits the durability and utility of this popular sport plane. How the little ship flies is not known for to our knowledge only the Luscombe test pilots have flown it, but if it bears the fine flight characteristics of the *Silvaire* it will be more than satisfactory for the author, who owned one of the latter and considers them "tops."

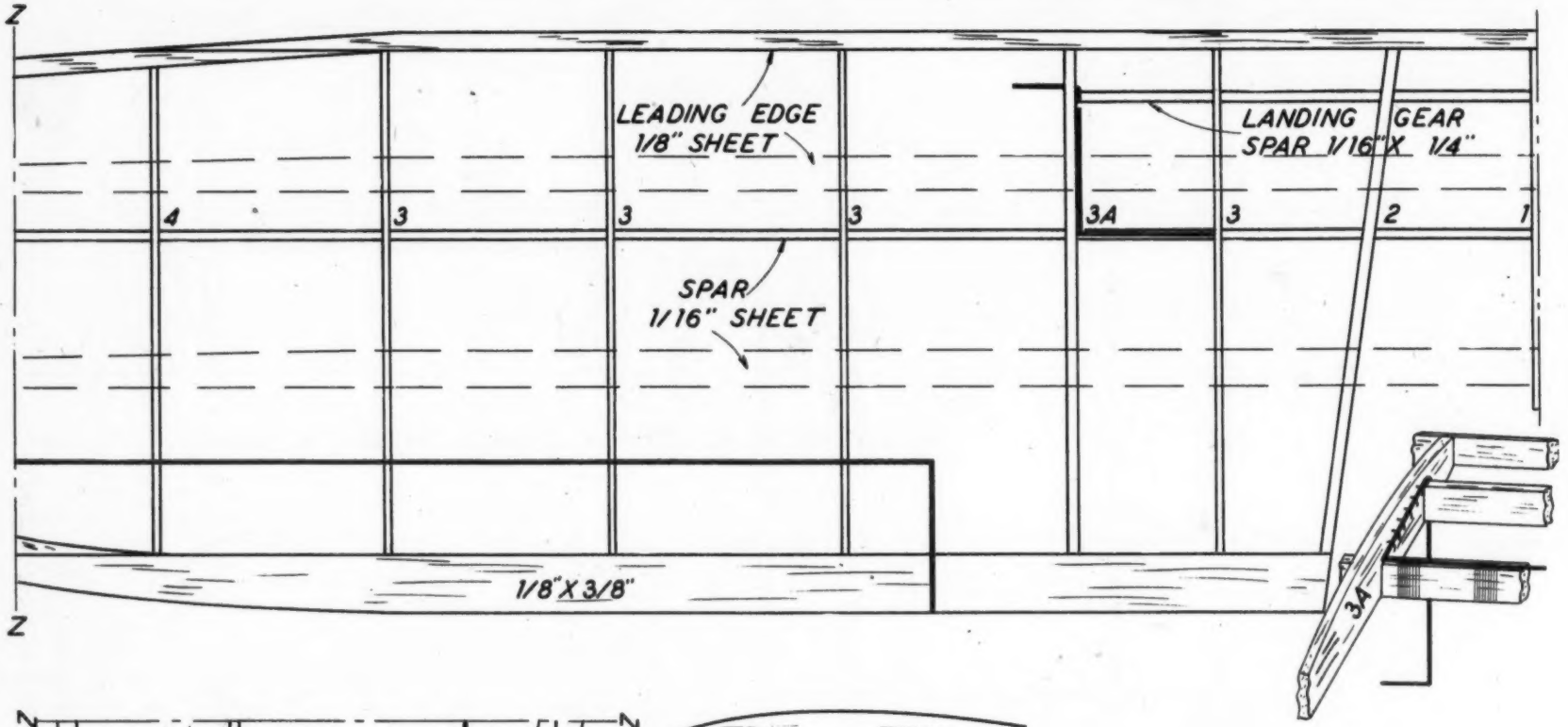
As a model the Luscombe 10 provided one of the sharpest looking yet easiest built planes we have ever designed for MODEL AIRPLANE NEWS. No deviation from scale was required to adapt the proportions to a satisfactory flying model design. Build this little ship and you will have one that you will be proud to display and fly.

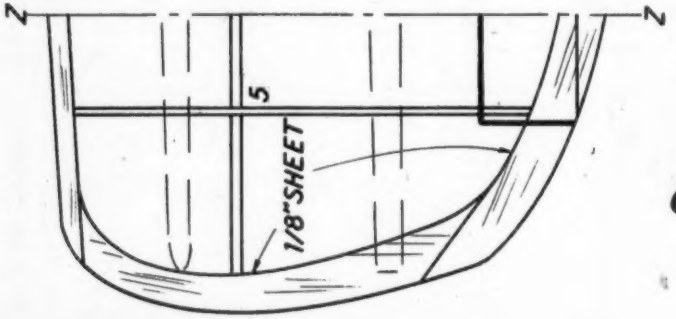
The drawings and text are for a rubber powered model, but by doubling the plans and altering the

(*Turn to page* 86)

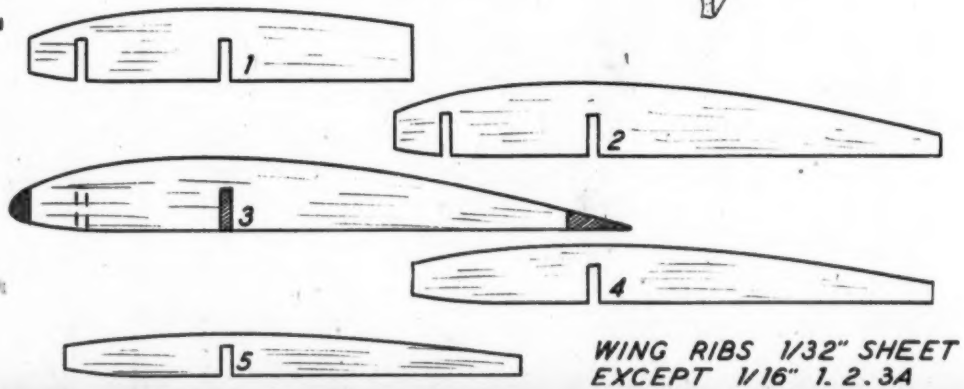

HOLLOWED BALSA
KEEL
ALL STRINGERS NOT SHOWN
NOSE PLUG
SECTION AT "G"
PLASTIC CANOPY
NOSE LAMINATIONS OF 1/8" SHEET
KEEL
G
A
B
C
KEEL
WING SHOWN IN BROKEN LINES
1-1/4"
4 @ 1-3/4"=7"
3/4"
3/8
FLYING PROPELLER
LANDING GEAR DETAIL
A
FUSELAGE BULK


BAMBOO PIN HOLDS MOTOR
RIB CONSTRUCTION
FILLET
X
Y
STABILIZER POSITION
D
E
F
KEEL
1/16" SQ. STRINGERS
B
C
D
E
HEADS 1/16" SHEET; 2 OF EACH REQUIRED



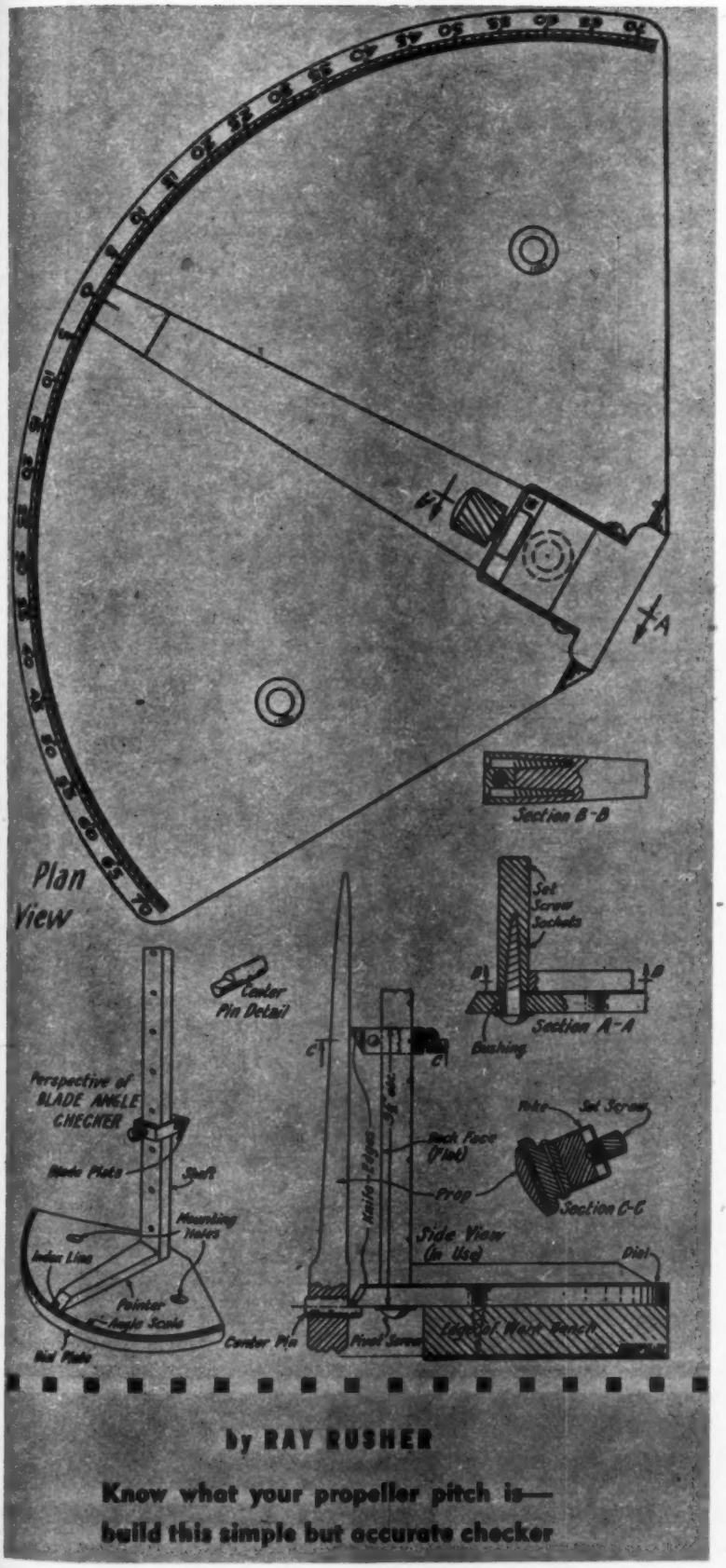


1-5/16" DIHEDRAL AT TIP



WING RIBS 1/32" SHEET
EXCEPT 1/16" 1. 2. 3A

PITCH CHECKER



WHILE the angle of any station along the blade of a propeller can be measured in a simple manner as described in Chapter 5 of Grant's book *Model Airplane Design*, if you have many props to check or want to determine whether a particular prop is true pitch or not, a blade angle checking instrument that will give accurate results in a minimum of time can easily be made. The perspective view of the instrument gives a general idea of its construction and the remaining views illustrate details and use.

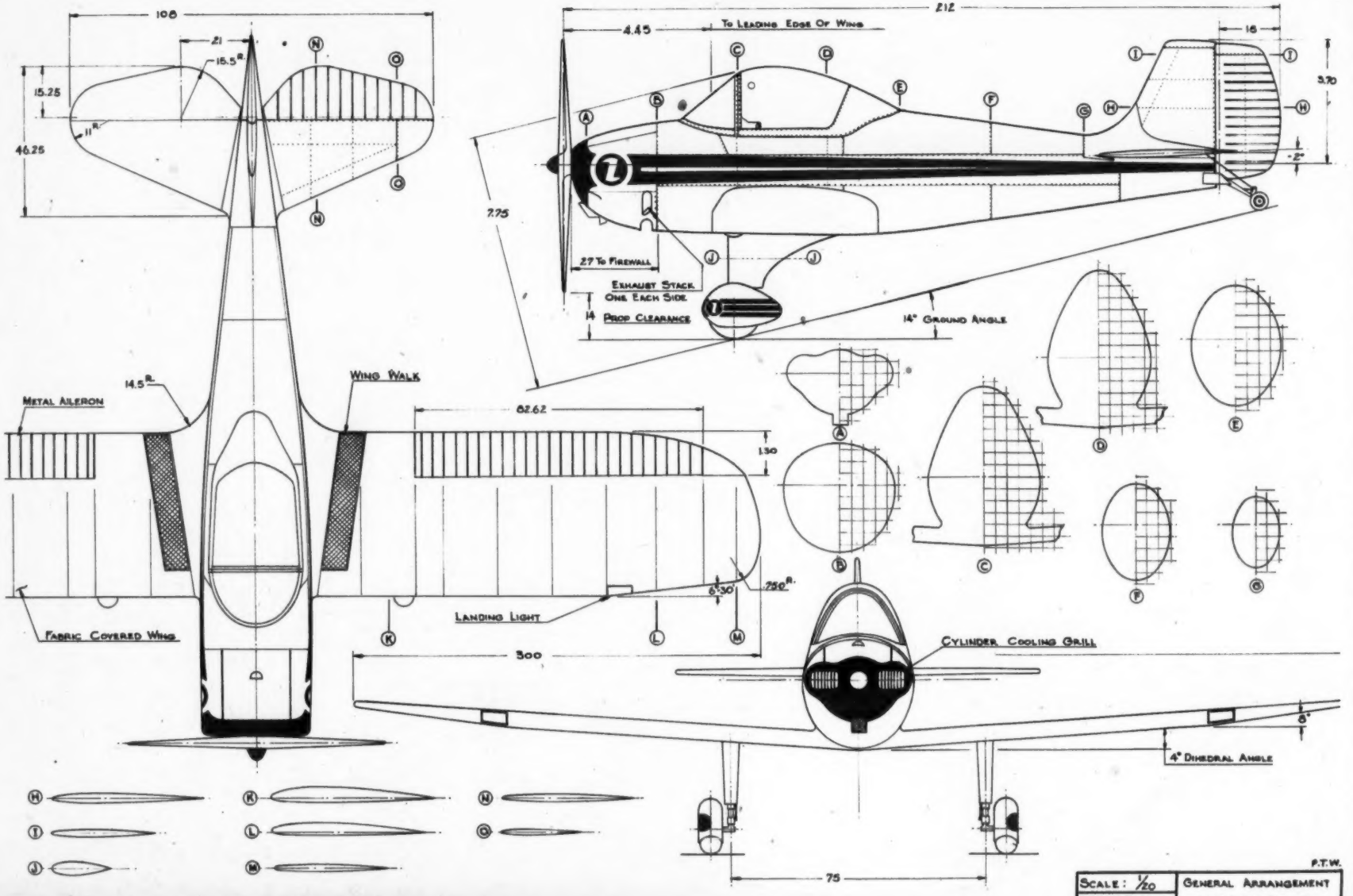
The blade angle checker consists of a dial plate, a shaft, a blade plate and a pointer—the pointer being secured to the shaft and the blade plate being slidable along the shaft. The shaft is rotatable relative to the dial plate and both the dial plate and the blade plate have knife edges for contacting the hub and blade respectively of the prop to give an angular reading on the dial at the index line of the pointer. The blade plate has a yoke in which a set screw is threaded for accurate location of the plate at various stations 1" apart along the shaft.

The shaft is a 3/8" x 5/8" stick of hardwood such as maple, the length being 8" for props up to 16" in diameter. Be sure the back face of the shaft is absolutely flat. This is best done by laying very fine sandpaper on a truly flat surface such as a piece of plate glass and rubbing the back face over it. Then make the front face parallel to the back face and finally the side faces accurately parallel to each other. Drill the lower end of the shaft to receive the pivot screw so that the shaft can be pivoted to the dial plate with a metal bushing to rotate in the hole of the dial plate. The bushing should be a good working fit in the hole but without play and about .003" longer than the thickness of the dial plate plus the thickness of the dial to prevent binding when the pivot screw is tightened.

The dial plate itself is cut from 1/4" or 5/16" wood and the shaft hole drilled in it, after which the dial is cut from the plan view of the drawing and attached to the dial plate with rubber cement. Cut out the hole in the dial for the bushings, insert the bushing in the dial plate, then cement the dial in position while its hole surrounds the bushing. In this way the dial is properly positioned in relation to the axis of rotation of the shaft.

The blade plate consists of a hardwood bar and a yoke having a nut soldered to it to receive a setscrew. Sockets in the shaft to receive the point of the setscrew are located by moving the blade plate to a position where its knife edge is exactly 1" from the knife edge of the dial plate and then tightening the setscrew, this procedure being performed at each inch

(*Turn to page* 47)

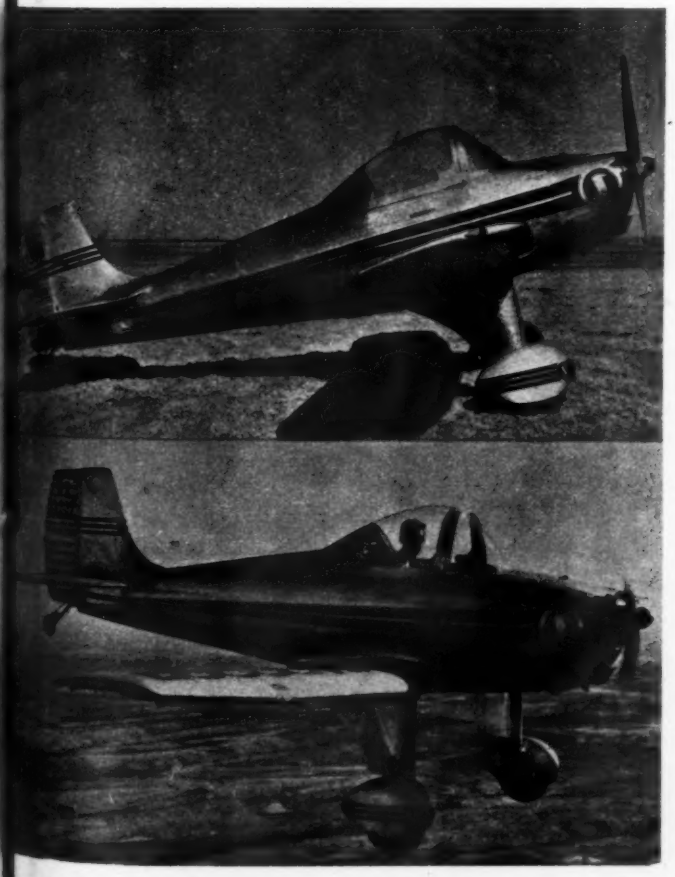

10.8
2.1
15.5 R.
15.25
11 R.
46.25
N
O
G
2.12
4.45
To Leading Edge Of Wing
1.6
3.70
2"
2.75
2.7 To Firewall
Exhaust Stack One Each Side
14 Prop Clearance
14° Ground Angle
14.5 R.
Metal Aileron
Wing Walk
6.2.62
1.30
6'-30"
7.50 R.
Landing Light
Fabric Covered Wing
3.00
Cylinder Cooling Grill
6°
4° Dihedral Angle
7.5
P.T.W.
Scale: 1/20
General Arrangement
Drawn By: L. H. Wieczorek
LUSCOMBE 10

PLANE ON THE COVER

LUSCOMBE 10

This new private plane looks like a baby pursuit ship complete with bubble canopy

by **ROBERT McLARREN**



THE engineering design of a lightplane no longer presents a serious problem and there are hundreds of competent engineers available for the job. Its manufacture in quantity is far simpler with war-proved techniques and thousands of widely experienced workers available. These two phases of the lightplane industry present no problem to the manufacturer. But one seemingly minor item does: what *type* shall we build?

Many companies have approached this problem on the basis of economy, most of them continuing to build the same type they had in quantity production before the war. Many others have made elaborate field studies of consumer desires, analyses of sales records of competitors over the past ten or fifteen years, serious economic studies of the probable future market, etc. Still others have gone direct to the public with polls in the hopes that returned questionaires would provide the answer.

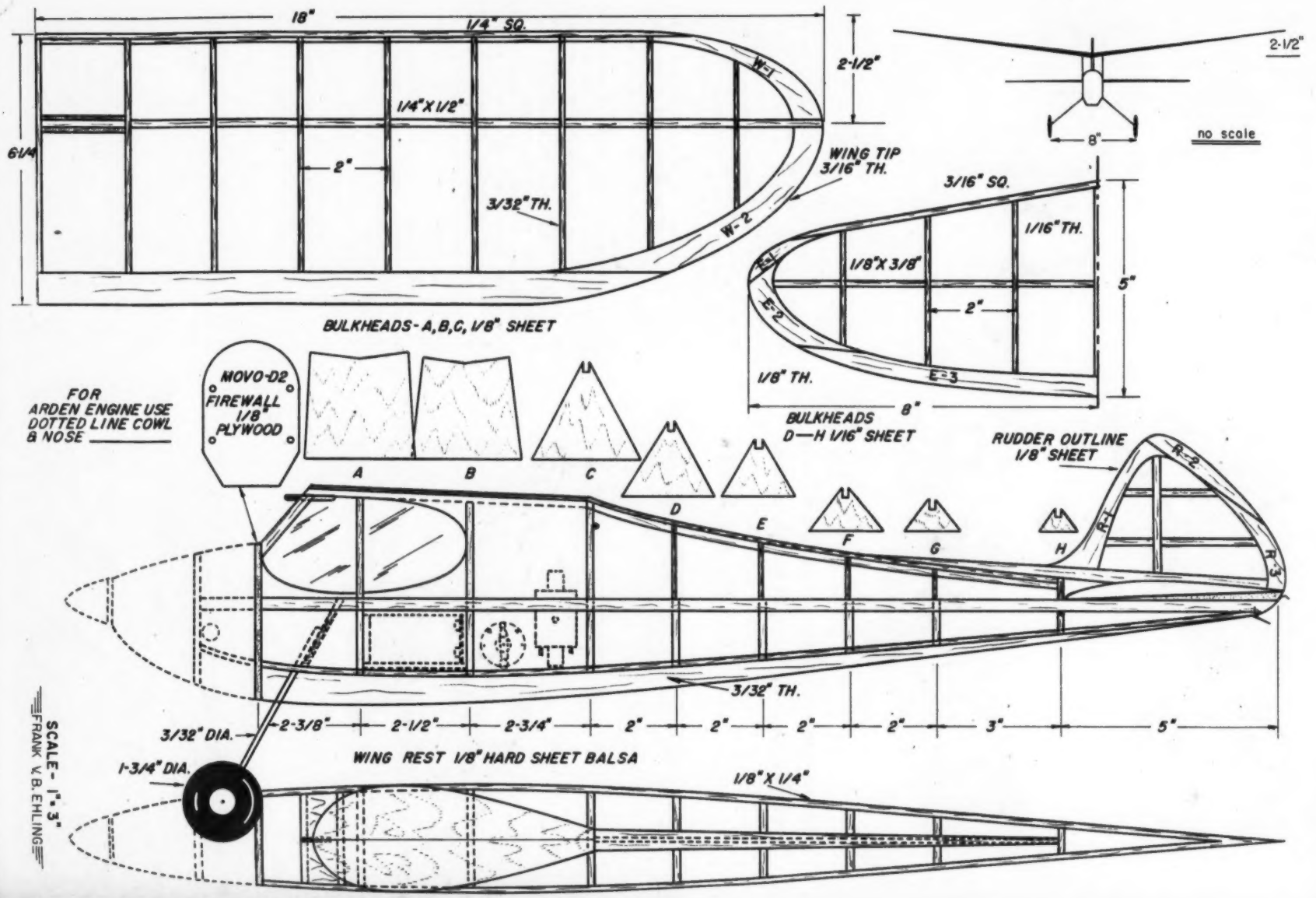
That the results of these various surveys have proved inconclusive is well shown in the variety of types now on the market. One question however remains unsettled, even after the expenditure of hundreds of thousands of dollars: does the flying public want a single-place lightplane?

Lockheed thought it did, built the *Little Dipper*, then decided it didn't and abandoned the project. Piper also thought it did and built his *Skycycle* (MODEL AIRPLANE NEWS November 1945), then decided to wait and see. One manufacturer however, seems to think there's room for a single place lightplane in the bluebook and gives every indication of seeing the thing through: Luscombe Aircraft Corp. The plane: the Luscombe Model 10, our Plane on the Cover this month.

That Luscombe is approaching the problem cautiously and tentatively is borne out by the fact that the Model 10 is actually a slightly revised Model 8 *Silvaire* with the wing moved from top to bottom and a single cockpit replacing the two seat cabin. Naturally, the design of an airplane is not as simple as that and the wing had to be redesigned into a full cantilever type. However, a fundamental requirement throughout the design was that as many standard *Silvaire* parts and assemblies be used as possible. With fully developed and proved tooling available on the two place model, large economies could result from their use on the new single place design.

The fuselage is the same with the exception

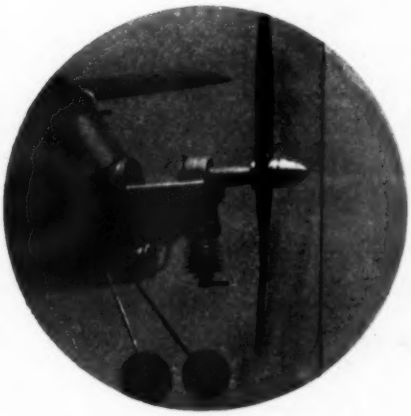
(*Turn to page 80*)


18"
1/4" SQ.
2-1/2"
W-1
1/4"X 1/2"
6-1/4
2"
3/32"TH.
W-2
WING TIP
3/16" TH.
BULKHEADS-A,B,C, 1/8" SHEET
2-1/2"
8"
no scale
3/16" SQ.
1/16"TH.
1/8"X 3/8"
E-1
E-2
2"
5"
1/8" TH.
E-3
8"
BULKHEADS
D—H 1/16" SHEET
FOR
ARDEN ENGINE USE
DOTTED LINE COWL
& NOSE
MOVO-D2
FIREWALL
1/8"
PLYWOOD
A
B
C
D
E
F
G
H
RUDDER OUTLINE
1/8" SHEET
R-1
R-2
R-3
3/32" TH.
3/32" DIA.
2-3/8"
2-1/2"
2-3/4"
2"
2"
2"
2"
3"
5"
WING REST 1/8" HARD SHEET BALSA
1-3/4" DIA.
1/8"X 1/4"
SCALE- 1"=3"
FRANK V.B. EHLING

DIESEL SPORTSTER

By FRANK EHLING

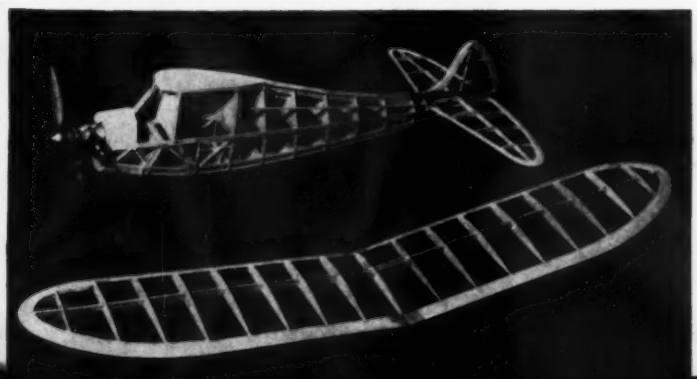
A fine little Class A model that performs very well with Diesel power



The *Movo* engine is inverted to raise thrust line

After a busy day at the field—note large diameter prop used with this engine

Here the little ship is equipped with a horizontally mounted *Arden*



THIS little ship has been the test job for several engines of which the Arden proved best; however the latter still has the inconvenience of the gas engine, namely ignition. The Movo D2 diesel was used next and with the disappearance of the ignition troubles went some of the power; yet it was a relief to go out to the field, bring only fuel and know that there would be no trouble with batteries, coils, and plugs.

A word of caution should be added here because we noticed that the engine ran better when the fuel was first mixed; as it stood the ether would evaporate and the pep was lost. Now we mix the fuel as we need it. Props are the deciding factor with this engine as the R.P.M. is not as high as with a gas engine. We found that an eight inch diameter and a five inch pitch worked well, yet we did not have time to test as many as we would have liked. This is where a great deal of experimentation can be undertaken to see just what is best.

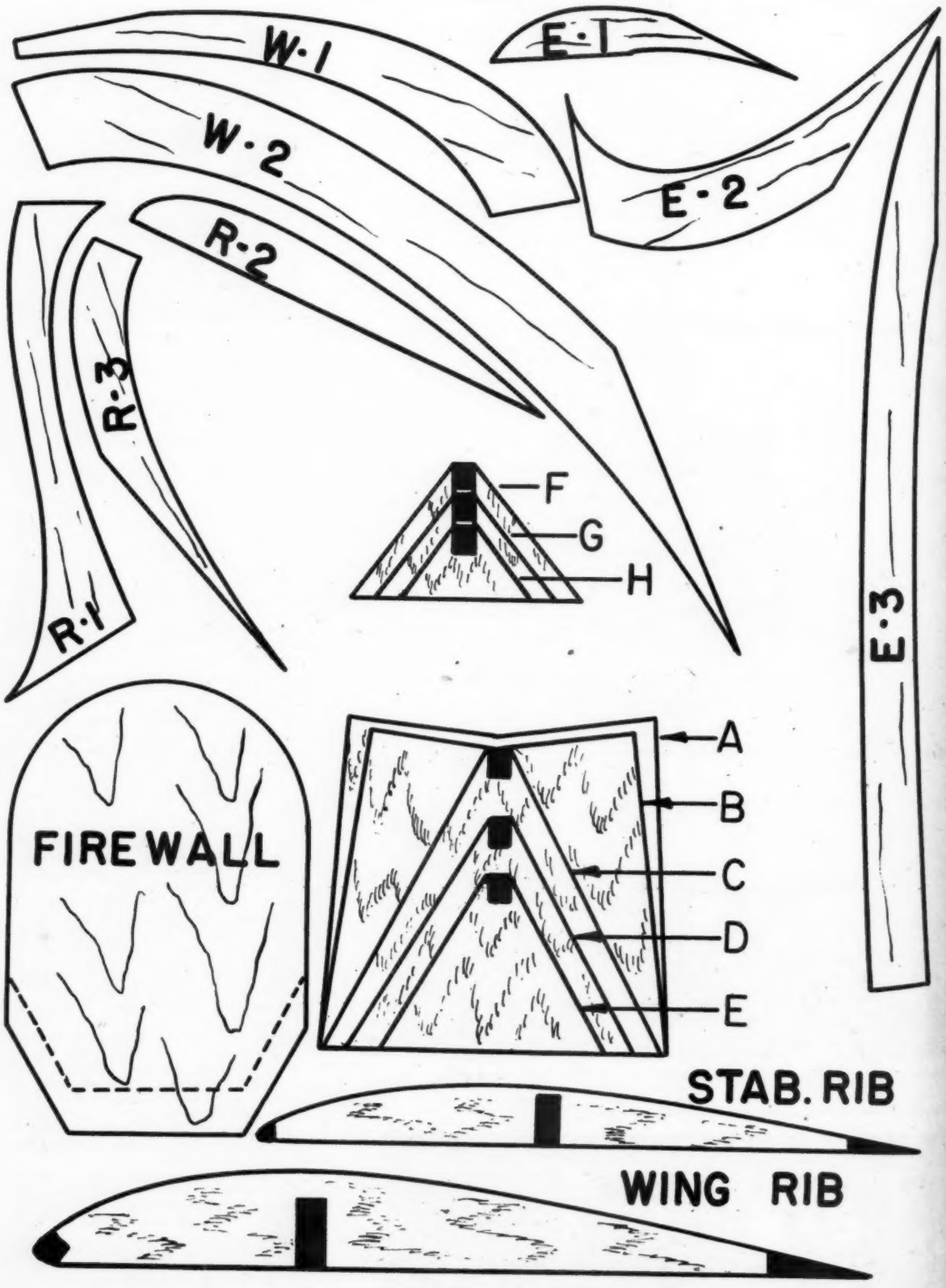
Since there is no ignition to cut in order to stop the engine, we used a small tank to keep her from flying out of sight, as we did not need to have the engine stop at twenty seconds. However, a spring loaded vane can be installed to work with an Austin air timer which chokes the engine to a stop.

Start construction by sanding all the wood that goes into the ship; in this way the framework will not only look better but will be much stronger as well as a little lighter. In laying out the sides note that the upper longeron is deeper; this is done to keep the lower longeron from pulling the upper one out of shape. While the sides are drying the formers can be cut to size and cemented in place along with the stringers. Cut the firewall and cement in place using plenty of cement. Cut the landing gear bulkhead, bend the gear to shape, bolt in place, then cement the whole assembly in the ship. The lower part of the fuselage is shaped out with stringers.

The rudder is of simple flat construction; however, care should be taken to cement all joints well to prevent the covering from warping the frame. The stabilizer is built in the same manner as the wing and should offer no trouble.

The wing should be made with great care.

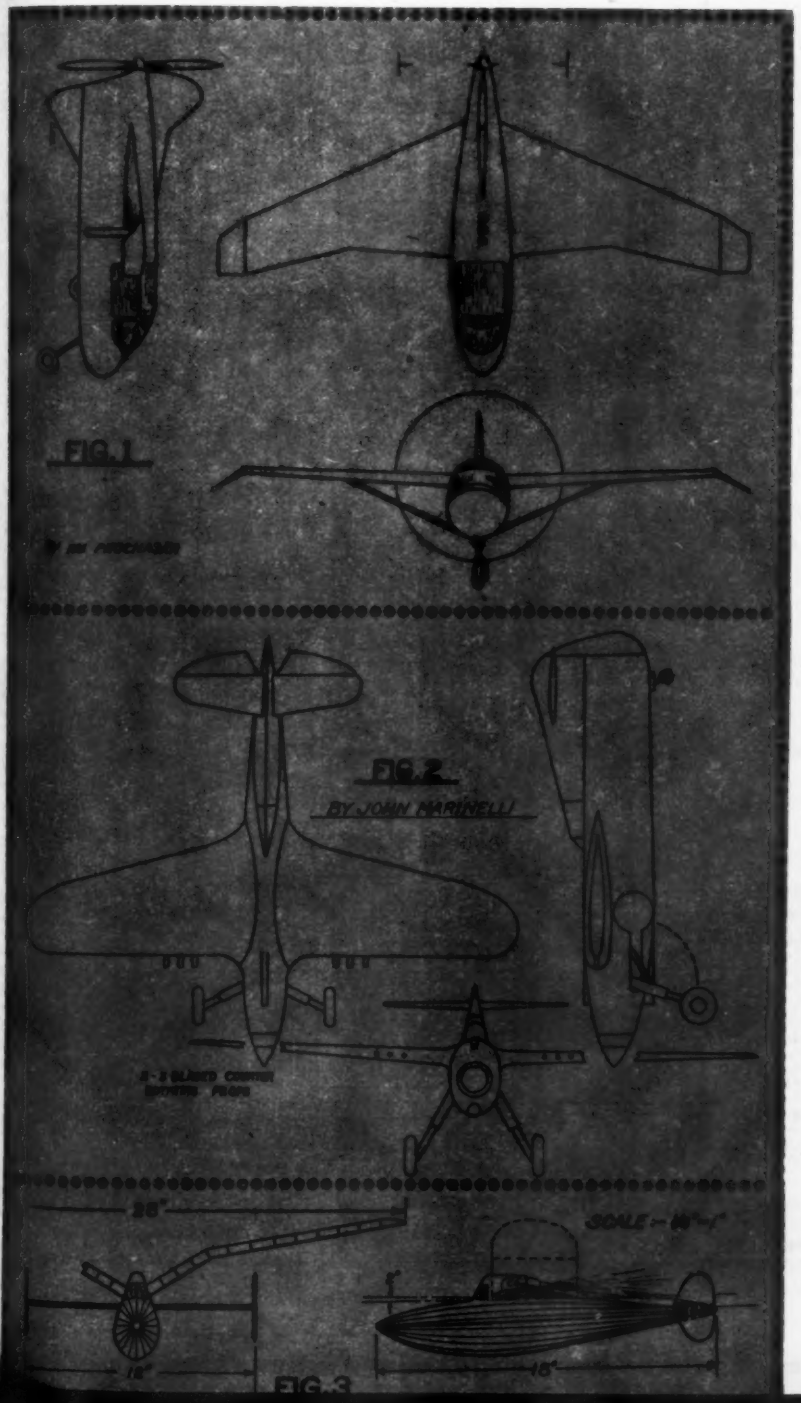
(*Turn to page* 93)



ALL PARTS FULL SIZE

DESIGN FORUM

By CHARLES H. GRANT



THE amateur engineer often derives much more satisfaction in flying model planes than full scale airplanes because when the model is completed he can fly it and the value of the ideas incorporated in it are consequently demonstrated. Often it is well to design a full scale ship first as a gas model. Flights of such a craft will answer many questions in the designer's mind concerning its performance that otherwise would have to go unanswered.

One of the advantages of miniature gas engine units is that they may be incorporated in scale models of full scale aircraft without modifications in the design. In the past we have chiefly discussed full scale planes, but now that many of the model experts have returned from the war and model flying is booming, more space will be given in this column to discussion of model aircraft. We invite all readers to submit their model designs for analysis. We shall be glad also to answer any puzzling questions on design.

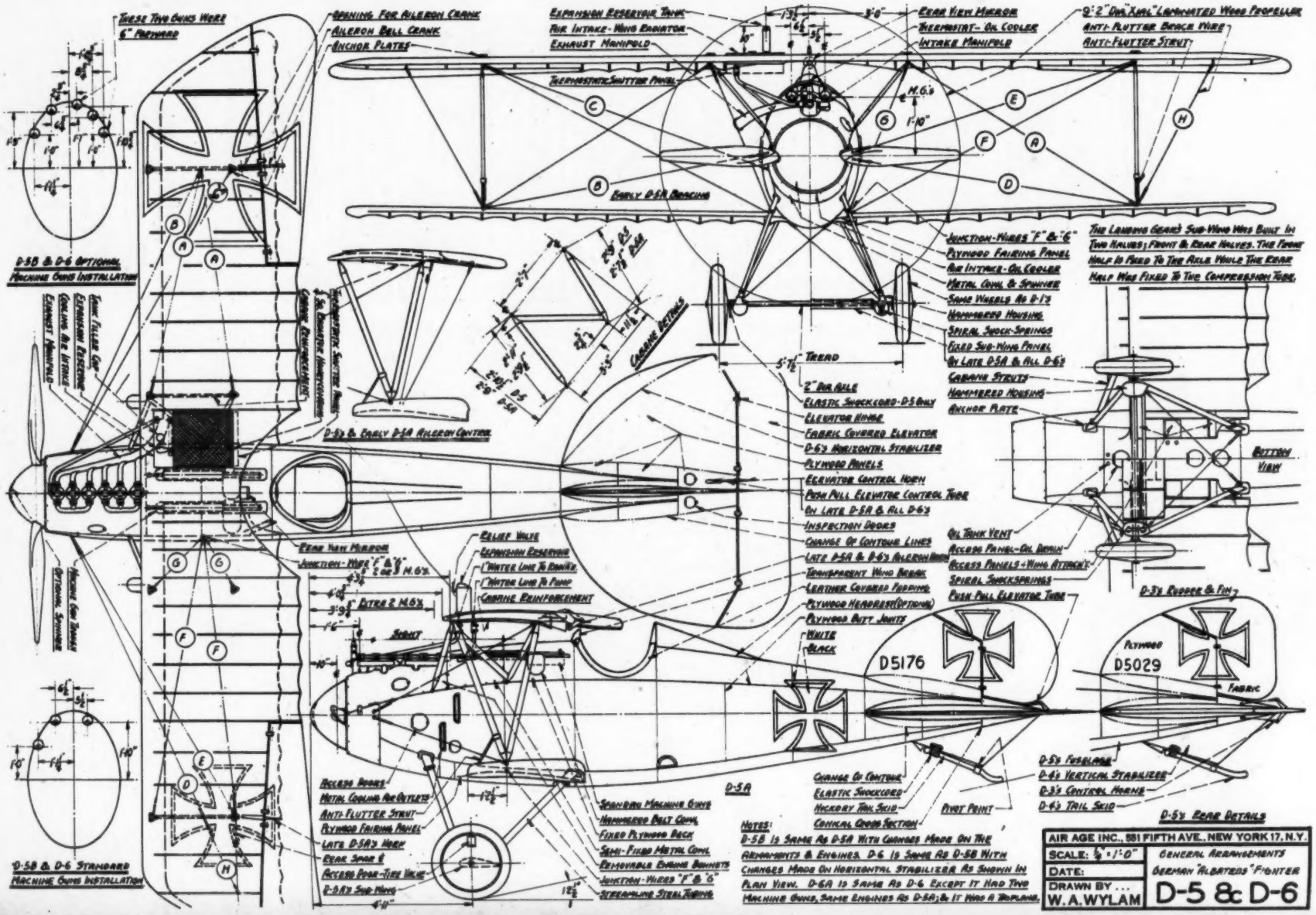
Gas powered models provide an unusual opportunity for testing the characteristics of all new untried types of full scale planes. It is much less expensive than designing full scale test airplanes because changes may be made readily and cheaply and the final design worked out in much less time.

As an example, let us consider the unusual type of plane (Fig. 1) submitted by William Prochaska of 6204 Field Ave., Detroit 13, Mich. He says he believes this should make an excellent full-scale plane; it would be a sport plane for the private flier. Mr. Prochaska does not state why he chose an airplane with this type of wing arrangement. Possibly he has seen an airplane of similar design which has intrigued his interest.

He intends to experiment with it by building a scale gas model. Most of the important points in the design of such a craft are not indicated by Mr. Prochaska, yet he wishes us to tell him whether or not an airplane of this type has a good chance of flying. Many things depend upon this, outside and beyond the general outline shown in the drawing. It is possible for this plane to fly provided certain design features are included. However, like all tailless airplanes, with little sweepback or sweepforward, the longitudinal moment arm is small and therefore longitudinal stability is critical. Such a plane has the advantage of low drag and comparatively light weight, and provided it can be made stable it is an ideal airplane. You will note that instead of sweeping back the wings as in ordinary tailless planes the wingtips are swept forward. Also the extreme tips are bent downward.

Now let us see what is necessary to make this craft stable, which is our first consideration. Longitudinal stability on all aircraft is maintained by causing the center of pressure on the wing-tail combination to move back when the plane nose up and forward when it noses down. The wing on this craft must be designed so that it produces this condition. Suppose the airplane noses up. It is then necessary that the part of the wing farthest to the rear increase its lift

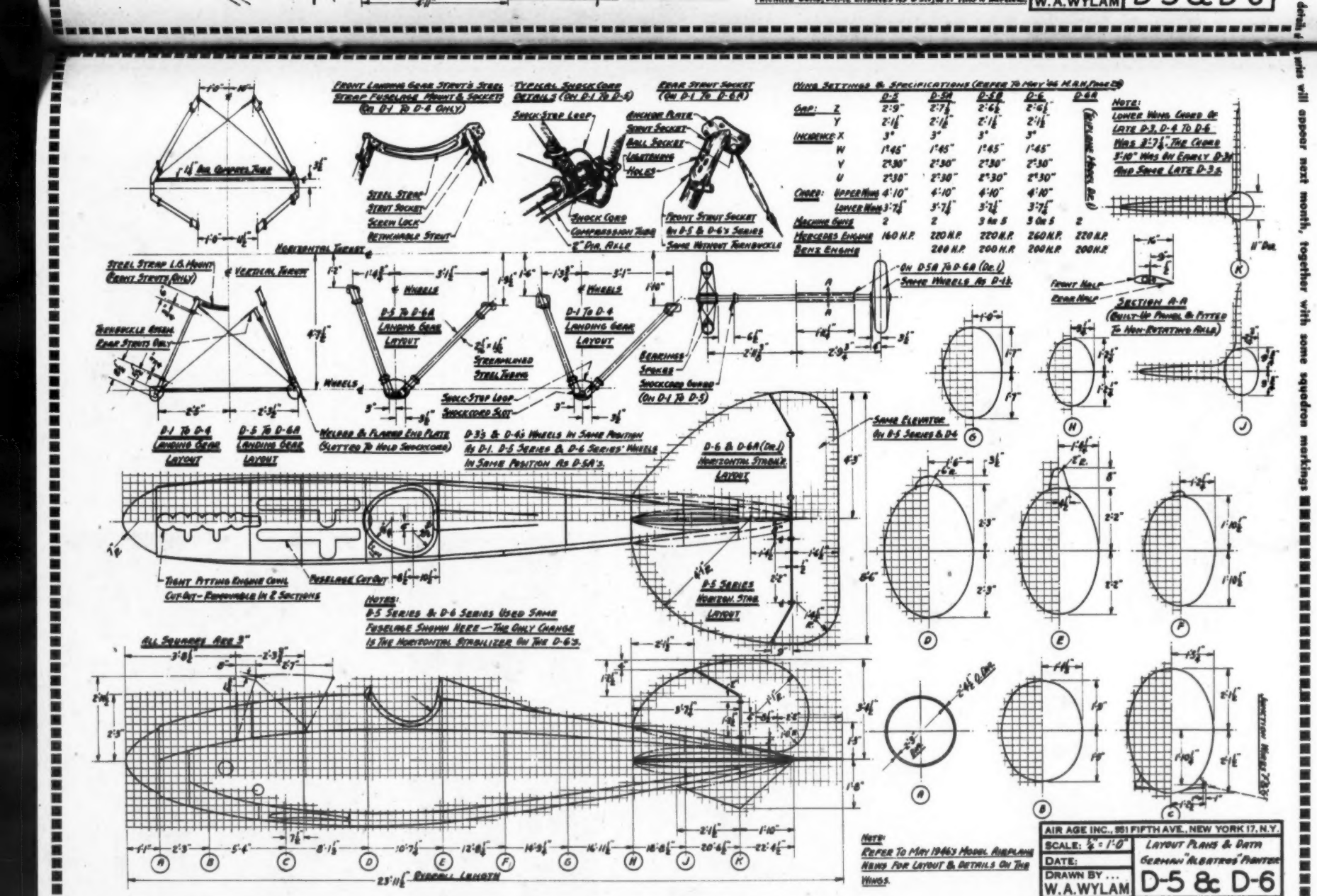
(*Turn to page* 54)



Notes:
D-5B Is Same As D-5A With Changes Made On The Arrangements & Engines. D-6 Is Same As D-5B With Changes Made On Horizontal Stabilizer As Shown In Plan View. D-6A Is Same As D-6 Except It Had Two Machine Guns, Same Engines As D-5A; & It Was A Triplane.

AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.	
SCALE: 1/2" = 1'-0"	General Arrangements
DATE:	German "Albatros" Fighter
DRAWN BY ... W. A. WYLAM	D-5 & D-6

Here are the promised details on the Albatros D-5 and D-6. Final details



details of ... series will appear next month, together with some squadron markings

No. 1 (top) Attractive sport flier designed by Adolph Henkel
No. 2 (above) George Bruun built this *Skycycle* model in a month

No. 3 A European prize winner sent by J. Biorens of Holland
No. 4 Dean Harter with his twin *Ohlsson 60* powered Douglas A-26

CONTROL LINE RACING—Speeds are going higher all the time (as this is written Ernie Babcock's official 113 mph is tops) and it is time that serious consideration be given to the actual mechanics of flying these winged bullets, with the goal of formulating fair regulations for all to fly under.

The difficulty, of course, lies in the ease with which a contestant can "horse" a model around the circle, thereby adding up to 50% to the speed which the ship can normally attain. In the past, it has indeed been said that to win a control line contest a "strong back and weak mind" were all that were required. Certainly the husky who could swing his ship around the hardest would win, other factors such as model finish and engine power being equal.

This practice became so bad that the flyers interested in true model speeds evolved several schemes in an endeavor to keep winning speeds "honest". The simplest was to mark a circle of about five feet diameter on the ground at the center of the flying ring. While time was being taken the contestant was required to keep his feet within this circle; to step over it meant disqualification. This idea was helpful, but still an experienced flyer could horse almost unhindered.

A more successful idea is the use of a turntable set on a strong post in the ring. The flyer is required to rest his arm on the turntable (which revolves freely on a pivot as he turns to follow the model) and time is taken only if he keeps his forearm in contact. This is quite successful yet leaves something to be desired. The turntable requires quite a bit of time to make and set up (meaning just one more extra detail for the always overworked contest committee), and even so quite a few miles per hour can be added to the speed of a fast ship by "leading" with the control hand.

The simplest idea we have heard of and one that meets approval with many of the best flyers requires no more equipment than a broomstick pointed at one end. To use this, the contestant gets his model in the air and warmed up in the usual manner. When he is ready for the timers he jabs the stick vertically in the ground and holds the top with his free hand. The other hand holding the control piece is then brought down so that the clenched hands are

No. 5 Enlarged *Whippersnapper* by M. Leonhardt has speed control

News of model airplane experimenters from all over the world

No. 12 Snappy free flight original of 52" span by J. McLarty

one above the other. If he has a tendency to horse, whether by design or not, the stick will incline away from the vertical and the judges can note this immediately. Upon finishing the flight, or at any time he wishes to land the model, he simply tosses the stick aside and has a clear field in which to maneuver.

Use of this simple plan will obviate such reports as "... just hit 170 mph when the lines broke", and will bring some sanity back to a phase of model flying that is rapidly going haywire.

THE LOW SPEED AERODYNAMICS RESEARCH ASSOCIATION, which was formed in England last fall for the express purpose of fostering research into the problems of miniature aviation, has now been expanded to include active branches in the United States and Canada. The former will be handled by D. B. Thurston, Rogues Path, Huntington Station, New York. The Canadian section is not quite organized but we will carry a notice of it in this column as soon as official word is received.

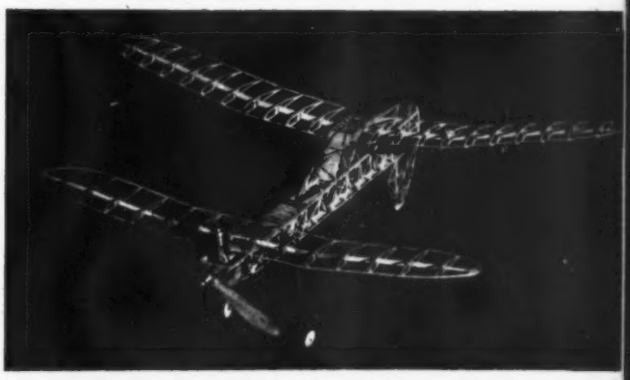
All American model builders who wish to participate in the scientific program of this organization are urged to write direct to Mr. Thurston.

In our initial notice of this enterprise we inadvertently gave the address of Dr. Cox, the President. We have been informed that quite a few letters were returned to their senders marked "address incorrect". All mail to the Association headquarters should be addressed to N. K. Walker, 9 Alexandra Rd., Farnborough, Hants, England.

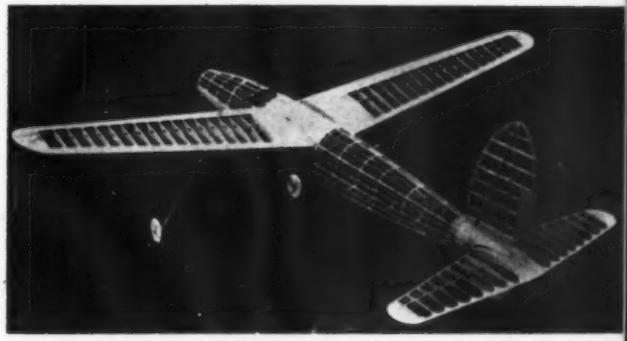
A.M.A. NOTES—Albert L. Lewis, Executive Director of Academy of Model Aeronautics in Washington, D.C., announced the appointment of Richard S. Robbins to the position of coordinator for the A.M.A. in Canada. The Coordinator's work will include cooperation with the Federation Aeronautique Internationale's representative group, the Royal Canadian Flying Clubs Association. His object is to advise in the formation of Canada's own Academy of Model Aeronautics. The F.A.I. is the only institution in Canada that can authorize the sanctioning of model aircraft contests in which entrants competing for international records can claim official recognition for their records. All interested Canadians who wish to help Canada have its own A.M.A. or desire to secure an A.M.A. flyer's license so that they can compete in American sanctioned contests are asked to write Mr. Robbins, c/o Hobby Youth Associates, 26 Dogwood Terrace, Livingston, New Jersey.

Mr. Robbins has also been appointed chairman of A.M.A.'s Air Education Committee. He and the new Air Education Committee, whose members will be announced later, will work with youth organizations throughout the United States in an effort to help them with their problems concerning youth and aviation, especially model aviation. All youth groups and individuals wishing information or

(*Turn to page* 60)



No. 11 Unusual tractor powered *Canard* built by Franco Conti

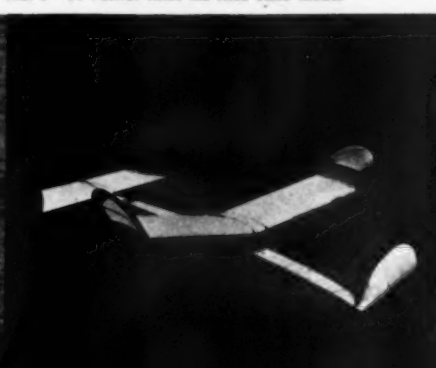


No. 10 Ernie Marsden sent pic of Cpl. Kerry's Wakefield model

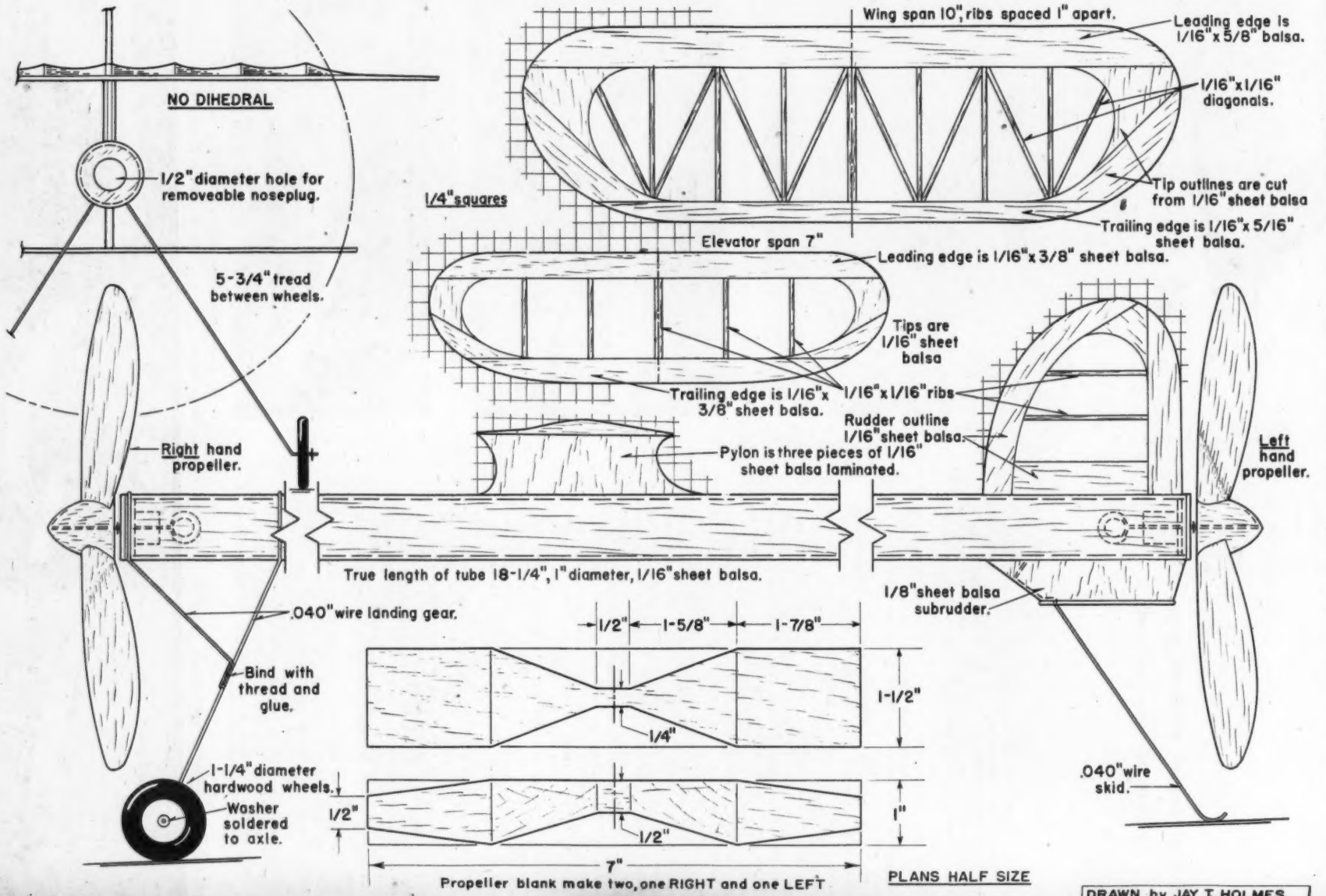
No. 9 Twin engine gassie built by Dick Young and Lon Steiner

No. 6 A P-51 from Alaska by Louis Bonnett

No. 7 F. Verrier likes his *Inez Jane* model



No. 8 Goo Boo *Flying Barrel* by G. Barden


NO DIHEDRAL
1/2" diameter hole for removeable noseplug.
5-3/4" tread between wheels.
Wing span 10", ribs spaced 1" apart.
Leading edge is 1/16" x 5/8" balsa.
1/16" x 1/16" diagonals.
Tip outlines are cut from 1/16" sheet balsa
1/4" squares
Trailing edge is 1/16" x 5/16" sheet balsa.
Elevator span 7"
Leading edge is 1/16" x 3/8" sheet balsa.
Tips are 1/16" sheet balsa
Trailing edge is 1/16" x 3/8" sheet balsa.
1/16" x 1/16" ribs
Rudder outline 1/16" sheet balsa.
Pylon is three pieces of 1/16" sheet balsa laminated.
Right hand propeller.
Left hand propeller.
True length of tube 18-1/4", 1" diameter, 1/16" sheet balsa.
1/8" sheet balsa subrudder.
.040" wire landing gear.
Bind with thread and glue.
1/2"
1-5/8"
1-7/8"
1-1/2"
1/4"
1-1/4" diameter hardwood wheels.
Washer soldered to axle.
1/2"
1"
1/2"
7"
Propeller blank make two, one RIGHT and one LEFT
.040" wire skid.
PLANS HALF SIZE
DRAWN by JAY T. HOLMES.

DRAWN by JAY T. HOLMES.

SPEED MADE EASY

Tubular fuselage provides strength with low drag. Wing is mounted near center on pylon.

by ROY L. CLOUGH JR.

Pile on the power yet retain perfect stability with this unorthodox design

IT IS undoubtedly true that many model builders who would like to enter speed contests are deterred because they have heard from the experts or discovered by experience that high speed rubber jobs are usualy tricky and hard to handle to obtain consistent results.

While it is no trick to build a very fast rubber job, it is often another matter to design one that will exhibit sufficient directional stability to make clocking it a comparatively easy matter. It is of paramount importance that the speed model fly straight and true across the measured course. To have the hottest model on the field means nothing if its flight is so erratic the judges cannot clock it.

The typical speed model is nothing more or less than a "pared down" fuselage job, with wing area cut to a minimum and propeller pitch and power upped to maximum. Since this results in tremendous torque effect such devices as offset thrust, left aileron, right rudder and sometimes acute dihedral are resorted to.

By means of these power-absorbing devices it has been standard practice to adjust the model for stright flight during the peak of its power output—which generally means the length of the measured speed course, after which the model goes "haywire" and performs anything from a snap roll to a dizzy spiral climb to the right. This might be fine in an aerobatics contest, but it leaves too small a margin of error to be productive of longevity in heavily loaded speed jobs.

That is why the records have been set by experts familiar with every whim of the breed.

However, there is no reason for leaving the speed jobs to the experts just because they have proved tricky in the past. It is possible to design stable high speed models and to make them simple enough in construction for any beginner to build.

First of all, what makes for speed? Boiled down to essentials and sifted of trivia, speed may be said to be achieved by piling on thrust and cutting down weight and resistance. It is more important to cut resistance than weight, but elimination of excess weight should not be ignored.

It seems to be the opinion of some builders that a speed model must be heavy to fly fast. This is not so, although it is easy to see how the idea got started since fast models have small wing areas to support their weight. However, there is considerable difference between heaviness and high wing loading, and power absorbing weight should be eliminated wherever possible without weakening the structure of the model.

A high wing loading permits a plane to fly faster since the lift at high speed just about balances the weight of the plane with a minimum of drag, whereas excess wing area, or low wing loading, at high speed results in greatly increased drag and gives the model a tendency to climb. Power used in climbing does not contribute to forward speed, therefore wing area must be held down below the climbing point.

A heavy model *must* fly faster than a light one of the same aerodynamical shape to stay in the air, but the light model can equal the speed of the heavy one on less rubber and pull away from the heavy job hands down with an equal amount of rubber. Since there is a limit on the amount of power that can be packed into any given fuselage, the lighter model will always be ahead of

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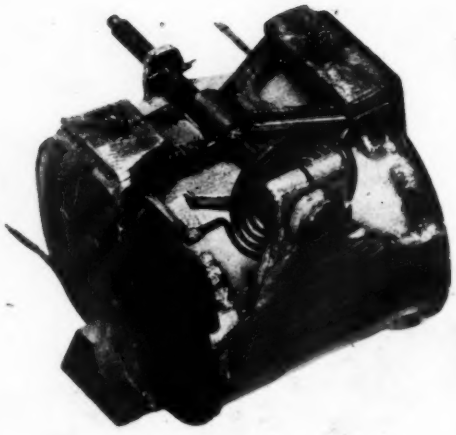
R. C. RELAY

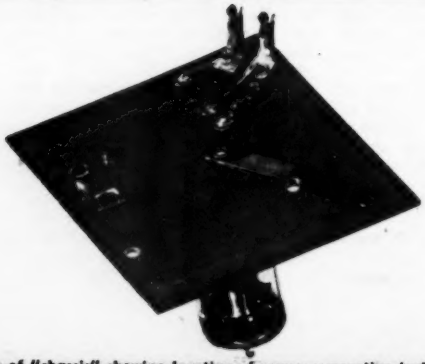
More lightweight parts for your radio control model

Base of the complete receiver with holes for mounting the relay



Finished relay; this illustration is about 1½ times full size

A spiral spring is used in this version of the relay



Underside of "chassis" showing location of screw connection lugs

by E. J. LORENZ

IN THE July issue we gave you plans for a midget escapement unit. This unit was made primarily for Class A and small Class B radio controlled models. This month, in keeping with the theme of a Class A radio controlled model, we present plans for a small and lightweight relay to be used in a radio receiver employing RK-61 or RK-62 tubes. This relay is compact and lightweight, and due to its construction it is not easily affected by vibration or sudden jarring.

Plans for a pre-tuned receiver, using an RK-61 tube, are partially given now and will be concluded in the next issue.

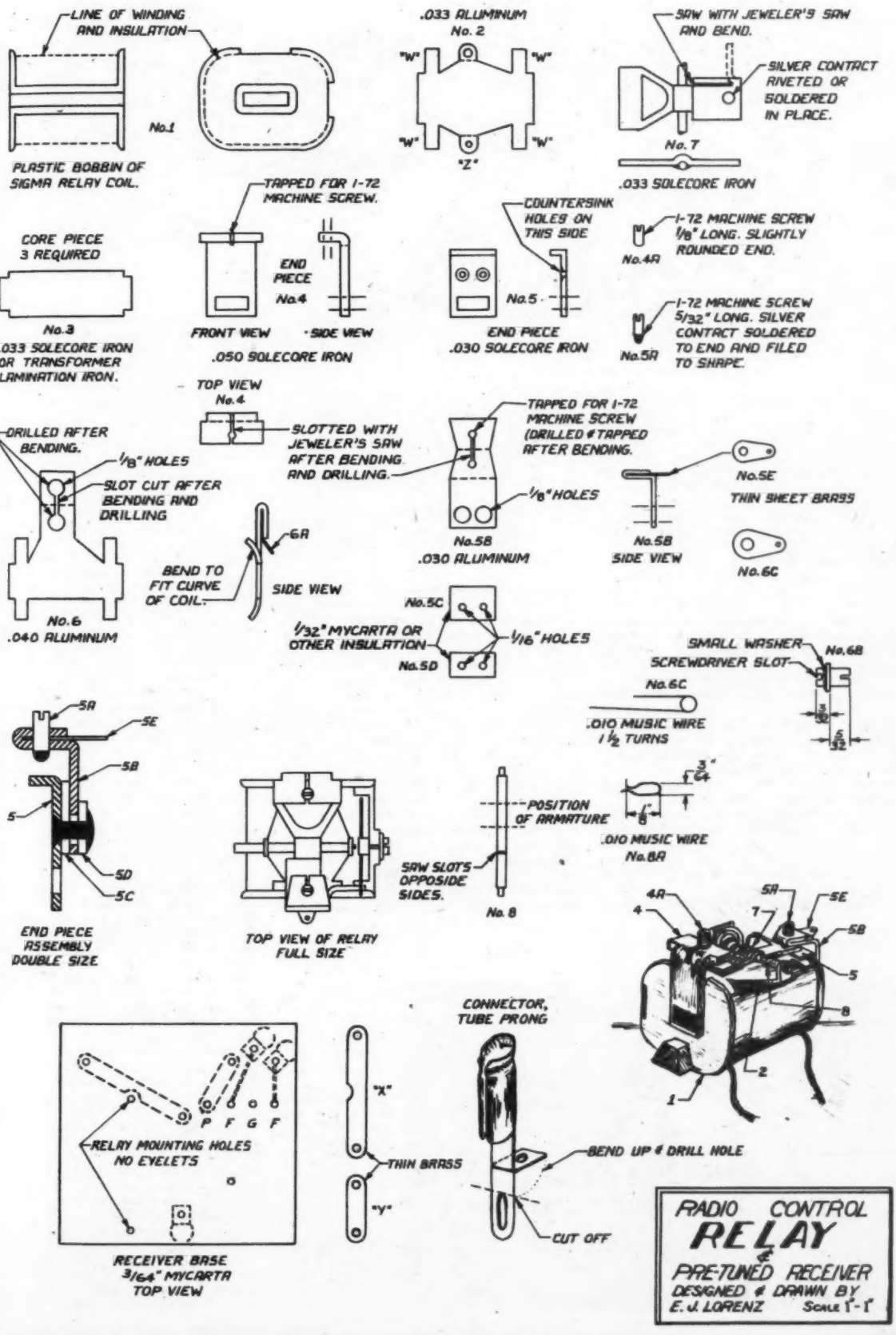
As the relay for a simple super-regenerative receiver, such as is employed for the ordinary radio control unit, constitutes the greater part of the weight exclusive of batteries, a special relay was constructed. It is one of a series made by the author in an effort to produce a small, lightweight and dependable one. There are several excellent commercially-made relays that may be used if no problem of size or weight is involved.

Specifications of the relay presented here are as follows:

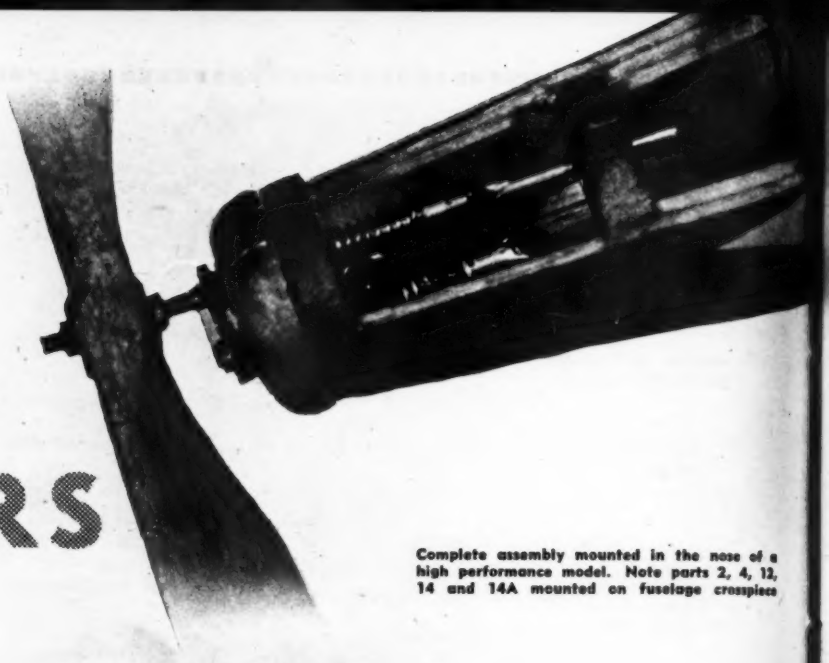
Size: 1-1/16" x 1-1/16" x 1-1/8"
Weight: 1.7 ounces
Resistance: 8000-10000 ohms
Type: Balanced armature

In addition to the relay's requiring a DC resistance of at least 8000 ohms (for RK-61 and RK-62 tubes), it must be capable of working on a very small change in plate current. This change in plate current ranges from .4 to 1 milliampere. To get a relay this sensitive requires a winding producing the maximum number of ampere turns. Since there is little current flowing through this winding the wire can be very small, approximately No. 44. It is this small size wire that offers the biggest problem to the builder who attempts to wind his own coil. If the builder wishes, he may wind his own coil or bobbin by building up a plastic coil form and winding it with No. 44 enameled copper wire until the desired resistance is obtained. The coil and iron parts used in this model were obtained from Sigma Instruments, Inc., 70 Ceylon St., Boston, Mass.

(*Turn to page 77*)


LINE OF WINDING AND INSULATION
No.1
PLASTIC BOBBIN OF SIGMA RELAY COIL.
.033 ALUMINUM
No. 2
"W"
"W"
"W"
"W"
"Z"
SAW WITH JEWELER'S SAW AND BEND.
SILVER CONTACT RIVETED OR SOLDERED IN PLACE.
No. 7
.033 SOLECORE IRON
CORE PIECE
3 REQUIRED
No.3
.033 SOLECORE IRON OR TRANSFORMER LAMINATION IRON.
TAPPED FOR 1-72 MACHINE SCREW.
END PIECE
No.4
FRONT VIEW
SIDE VIEW
.050 SOLECORE IRON
COUNTERSINK HOLES ON THIS SIDE
No.5
END PIECE
.030 SOLECORE IRON
1-72 MACHINE SCREW 1/8" LONG. SLIGHTLY ROUNDED END.
No.4A
1-72 MACHINE SCREW 5/32" LONG. SILVER CONTACT SOLDERED TO END AND FILED TO SHAPE.
No.5A
TOP VIEW
No.4
SLOTTED WITH JEWELER'S SAW AFTER BENDING AND DRILLING.
DRILLED AFTER BENDING.
1/8" HOLES
SLOT CUT AFTER BENDING AND DRILLING
No.6
.040 ALUMINUM
BEND TO FIT CURVE OF COIL.
6A
SIDE VIEW
TAPPED FOR 1-72 MACHINE SCREW (DRILLED & TAPPED AFTER BENDING.
1/8" HOLES
No.5B
.030 ALUMINUM
No.5E
THIN SHEET BRASS
No.5B
SIDE VIEW
No.6C
No.5C
1/32" MYCARTA OR OTHER INSULATION
1/16" HOLES
No.5D
SMALL WASHER
No.6B
SCREWDRIVER SLOT
No.6C
.010 MUSIC WIRE
1 1/2 TURNS
5A
5E
5B
5
5D
5C
END PIECE ASSEMBLY DOUBLE SIZE
TOP VIEW OF RELAY FULL SIZE
POSITION OF ARMATURE
SAW SLOTS OPPOSIDE SIDES.
No. 8
.010 MUSIC WIRE
No.8A
4A
4
5A
7
5E
5B
5
8
2
1
P F G F
RELAY MOUNTING HOLES NO EYELETS
RECEIVER BASE
3/64" MYCARTA
TOP VIEW
"X"
THIN BRASS
"Y"
CONNECTOR, TUBE PRONG
BEND UP & DRILL HOLE
CUT OFF
RADIO CONTROL
RELAY
&
PRE-TUNED RECEIVER
DESIGNED & DRAWN BY
E. J. LORENZ
Scale 1"-1"

DUAL MOTORS



Complete assembly mounted in the nose of a high performance model. Note parts 2, 4, 12, 14 and 14A mounted on fuselage crosspiece

by DON FOOTE

How to double the performance of your model by "shifting gears"

WHILE gas motors for model airplanes have been constantly improved, until now there has been no change in rubber powered jobs. But here is a description of an automatic transmission for rubber powered jobs that makes it possible to use two separate rubber motors consecutively.

No, this is not the old idea of gearing several strands of rubber to the propeller and unwinding them all at the same time. This is actually a transmission which shifts from one rubber motor to another. The prop is turned by one rubber motor while the other motor is locked. Then when the power in the climbing motor is expanded an automatic shifting process takes place which disconnects the first motor and kicks in a cruising motor with less power, thereby doubling the length of the motor run. That's not all! When the cruising motor is unwound another simple automatic process tensions the second motor and permits the prop to free wheel.

Amazing? Right! It operates perfectly, is simple in operation, requires no care, and weighs less than an ounce. It's strong, can be snapped into the nose of any rubber powered job and will last indefinitely.

However, before examining this gadget further, let's meet its inventor and learn just how he happened to develop it. He is no newcomer to the modeling fraternity, but is in fact a pioneer. Harry Roderick of Oakland, California, an ex-lieutenant of the Naval Air Service, has been building and flying models since the early 1900's. Proudly displayed in his workshop is a model he built in 1909, powered with a small steam engine, which is even now in perfect flying condition. This steam powered model is believed to be the oldest flying model in existence (See August 1941 MODEL AIRPLANE NEWS).

Mr. Roderick recommends reading model airplane magazines to keep abreast of model activities in other sections of the country. It was while perusing one of these magazines that the idea of this dual transmission was conceived. A model builder had asked the question, "Why doesn't someone invent a two stage motor for rubber powered models?" Mr. Roderick tried to read further but that question kept popping up in his mind with such persistency that finally he could stand it no longer and he retired to his shop to work on the idea. For weeks he spent all his spare time in the workshop and during this time the clocks in his neighborhood were placed in safe deposit because he "commandeered" all available gears for his experiments. After many troubled nightmares of big and little gears parading up and down the workbench, a combination was arranged that seemed to solve the problem although that first transmission resembled an eight-day clock.

Like all inventors Mr. Roderick was not satisfied with the product and continued his experiments with an eye always to simplify and perfect. This he accomplished and in 1938 entered a ship equipped with this dual transmission in the California State Fair Model Contest. His model easily won first place.

Undoubtedly you will be interested in knowing just how the model works, and the best way to explain it is to follow through the entire operation beginning with the winding process. This detailed explanation may seem to have all the complications of a Rube Goldberg creation, but once you have actually wound the rubber motors and seen the transmission operate you will realize that it is really quite simple.

Referring to Fig. 1, when rubber motor 1 is sufficiently wound it is hooked through cam shaft 2. Cam shaft 2 is then inserted into sliding clutch member 3 and pin 4 is engaged in bayonet slot 5. A spacer of U-shaped sheet metal is placed over the propeller shaft between the housing and clutch member 3, compressing spring 6 so that cam shaft 2 can easily be inserted into bayonet coupling 5. This completes the winding of the first motor, but the spacer must be removed before releasing the propeller. Wind the second motor 7 and hook into tensioner 8, thus compressing spring 9. The second motor is locked against rotation by trigger 10 engaging pin 11.

Now both motors are completely wound and ready for the flight.

Releasing the propeller permits the motor 1 to operate while the second motor 7 remains locked. As the first

(*Turn to page* 40)

Shifting gear is shown disengaged in this view and neither 6 or 9 are compressed

Music to Our Ears
When the heavy brown door-gateway to the sound-proof audition chamber—swings closed behind another group of 'OK' engines. It marks the commencement of 15 critical minutes during which we check their future flying career!
Each engine is rapidly 'hooked-up' on the ingenious 'OK' MULTI-MOUNT. This device (of our own design, construction and exclusive use) makes large scale testing with individual observations a practical reality.
Under typical, model-flying conditions—NO MECHANICAL STARTING AIDS! each engine 'auditions' individually. Timers adjusted, props manually flipped for starting. Revved-up, throttled-down then stopped. Repeated for fifteen gruelling minutes—the vibrant roar blends into a symphony of flying power: MUSIC TO OUR EARS!
We ask each engine to 'show us' its easy-starting, consistent running BEFORE sending them forth to show you . . . AFTER they make music to our ears, you can depend upon an 'OK' to make championship flight performance in your model! TEAM UP WITH AN 'OK'!
O.K. 29
A new—completely post war produced-Class B Champion motor takes it place on the flying line with its top performing brothers.
OK-29—laboratory tested, block tested, flight tested—upholds the proudest family tradition in the model motor field for easy starting and consistent running.
Just what you would expect from 'OK'—designed for your latest B model thriller, or the old favorite that deserves only the finest in power plants.
12 REASONS WHY OK-29 KEEPS EVERY PERFORMANCE PROMISE:
1 pc. STEEL CYLINDER—no gaskets!—no heat dams!—for even heat flow . . . DEEP CYLINDER FINS effectively dissipate heat. More efficient, cooler, longer running . . . ALUMINUM ALLOY CRANKCASE features streamlined cooling fins and stronger mounting lugs . . . EXHAUST STACK integral with crankcase . . . TRANSFER AND EXHAUST PORTING exclusive with "OK" 29 (Pat. No. 2,179,483) . . . ROTARY VALVE with venturi opening over ½ dia. of cylinder bore retaining easy-starting quality of "OK" engines . . . 1 pc. PISTON (not stamped) hardened and lapped to cylinder . . . ALUMINUM ALLOY CONNECTING ROD, drop-forged, heat-treated . . . ENCLOSED TYPE TIMER, accessible and easy for critical adjustments . . . BAKELITE TANK, impervious to synthetic fuels . . . NEEDLE VALVE designed for fine adjustment . . . GASOLINE TANK mounted on crankcase.
'OK' IGNITION PACK: Fitted with 'OK' Coil, Condenser and Leads, $3.00
$15.50 Incl. Sport Plug Bakelite Tank & Fuel Line
OK 60
For Free Flight? . . . For Control Line? . . . Yes! In any department! In every department—'OK' Super 60 takes 'C' honors for easy starting—consistent running. Exhaustive laboratory tests—confirmed by modelers from coast to coast prove 'OK' Super 60 has exceptional thrust, torque and endurance.
$18.00 Incl. Sport Plug Bakelite Tank & Fuel Line
'OK' IGNITION PACK: Fitted with 'OK' Coil, Condenser and Leads, $3.00
O.K. TWIN
FEATURED BY YOUR OK DEALER
DESIGN IMPROVED! PERFORMANCE IMPROVED! The 'OK' Twin is back again—still the only opposed "twin cylinder" motor of its kind.
'OK' TWIN-IGNITION PACK: Fitted with Twin-Coil, Condenser & Leads, $4.50
$49.00 Incl. Plugs Tank & Fuel Line
OK COIL
O.K.
Engineered for Model Engines. This coil meets—and exceeds our exacting standards for maximum efficiency with minimum internal losses! Delivers a high voltage, hot, intense spark for modern high compression engines! This superior, long-life coil is included with all 'OK' engines. Complete with high-tension lead.
$3.00 For All Single Cylinder Motors—At All Dealers
"Snap-to-Start"
HERKIMER TOOL & MODEL WORKS, INC. HERKIMER, NEW YORK
EXPORT OFFICE

WORLD WAR I

by ROBERT CAMPBELL

Note rudder shape, oval fuselage on this early Albatros DV

Note small leading edge strut and extra wires on this DV!

Stock DV without extra wing tip bracing wires

IF ANY German World War I aircraft manufacturer desired to claim 1917 as its banner year, the Albatros Flugzeugwerke certainly earned the uncontested right to the honor. In the two seater field, Albatros was represented by its C.III and C.VI in diminishing but still substantial numbers, and by its C.V and C.X in quantities threatening to equal the combined output of Rumpler, Halberstadt, and L.V.G. types. But it was in the single seater field that Albatros shone by supplying fighters to the Imperial Air Service at a ratio of about 3 to every 2 ships produced by Fokker, Pfalz, and Roland (L.F.G.) combined. This manufacturing virility, of course, was fostered by the corrupt goings on between the German procurement agency and the Albatros company as explained in previous articles.

D.V Development

The year 1917 also saw the gradual passing, productionwise, of the Albatross D.III and mid-year development of the D.V model on which the Germans pinned so much hope. Following closely the lines of the D.III, the D.V was a still further development of that famous model which had given a good account of itself in spite of its structural deficiencies. But the D.V actually represented little improvement. In lightening up the plane for the sake of a few pounds weight and cleaning up which resulted in a few more miles speed, Albatros engineers actually created a plane more dangerous than the D.III had ever been.

Because so many D.III parts were interchangeable with the D.V, the new ship was put into production without the customary extended test period to which aircraft even in that day were submitted. By the time it had been in service three months, at least 23 German pilots had been killed through wing failures during extended dives. The trouble with the D.V was the single spar lower wing, just as had been the case with the D.III. When strained, the lower wing simply collapsed, putting an overload on the upper wing which in turn folded up almost simultaneously.

Because these breaks invariably oc-

curred outboard of the interplane struts on either side, witnesses believed the upper wing overhang was the source of trouble inasmuch as an attempt had been made to solve the problem by minor changes in the lower wing. The Albatros engineering department cure was to install additional flying wires which ran from the lower wing strut fitting to the outermost full tip rib. This addition had the effect of permitting higher loads on the upper wing overhang, that is true, but it only prolonged the agony by giving a false confidence to the German pilots who flew the D.V. This simple change was made at first at the factory on production models of the D.V. The model designation was changed to D.Va. All D.V's in service, however, were brought up to the change by addition of the flying wire in the field although their designation was not changed in the records.

Almost coincident with the introduction of the D.V in 1917 was development of a new Mercedes engine for pursuit planes to supplant the well tried 160 hp model used up to that time. First installations were made late in October 1917, and because of the favor Albatros held with official Berlin, the D.Va was the first ship to put the new engine to use. A development of the 160 hp model, the engine was rated at 180 hp and utilized a number of design features which the Germans had found successful in their 260 hp Mercedes supplied for observation planes and bombers. Compression ratio in the 180 hp Mercedes was 4.64:1 compared to 4.50:1 in the 160 hp model. Respective dry weights were 635 lbs., and 618 lbs.; weights per b.h.p. were 3.65 and 3.80; while fuel consumption in the 180 hp model was only .81 pints per hour more than in the older engine. The extra power thus available just about cancelled out the effect of the added flying wire and the D.Va continued on its merry way making life insecure for German pilots.

To eliminate the possibility of folding a wing, the German pilots continued to take it easy in dives and in maneuvers with the result that their potential as skilled fighting men could not be fully realized. Allied pilots, with stronger machines, took advantage of this by diving closer to the ground than the German pilots dared and thus escaped many a tight spot. Tired of playing nurse to an aerial weakling, a group of German pilots headed by von Richthofen demanded an investigation to discover what the trouble was with the D.V. When the investigating board's report was finally revealed, one glaring truth stood out: the Albatros D.V had never been subjected to so much as a simple sand load test to prove the soundness of its engineering!

Sand load tests immediately ordered showed exactly where the Albatros wing weakness was centered. Deflections measured along the leading edge of the lower wing were found to vary increasingly toward the tips as the loads went up. Static loads equivalent to air loads encountered in sharp high speed pull-outs broke the test wings in the same place each time. The break occurred in the nose section of the wing directly in front of the interplane strut. Albatros engineers solved the problem by installing a small strut from the leading edge at the point of breakage which attached to the front interplane strut about 12 inches from its lower end. This additional bracing is visible in the lower picture in this article. Again, as in the case of the flying wire, the strut was ordered on all production planes, and kits of parts were

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Dual Motors

(*Continued from page 36*)

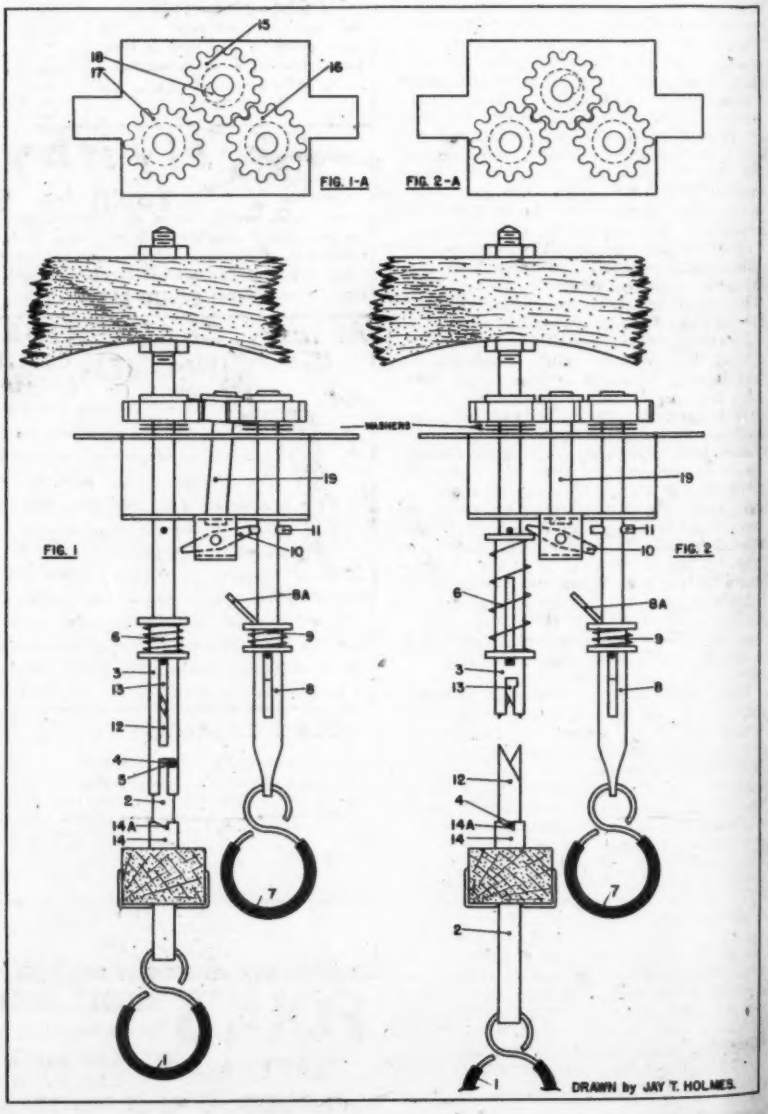
motor loses its power, spring 6 expands and forces cam face 12 against cam 13 (both are cut at an angle), causing a rotary motion, thereby unlocking pin 4 from slot 5. The remaining winds in the first motor pull shaft 2 rearward engaging pin 4 in notch 14a of fixed bearing 14 providing a tensioner as shown in Fig. 2. When pin 4 is disengaged from slot 5, spring 6 snaps clutch member 3 forward against trigger 10 unlocking pin 11, and leaving the second motor free to unwind as shown in Fig. 2.

A tumble gear 15 (see Fig. 1A) is fastened on counter shaft 19. Shaft 19 is mounted in a bearing at the rear end and in a slot 18 at the gear end, allowing gear 15 two positions as shown in Figs. 1A and 2A. Gear 15 is always enmeshed with gear 16 but only meshes with gear 17 when 16 is revolving. When the second motor is unlocked gear 16 starts revolving, thereby throwing gear 15 to the top of slot 18 engaging propeller gear 17, Fig. 2A.

As the second motor expends its power spring 9 forces finger 8a on tensioner 8 against trigger support causing gear 16 to stop rotation. When gear 16 is stopped the propeller gear 17 throws tumble gear 15 into its lower position in slot 18 thereby permitting the propeller to free wheel.

It is only when you cannot get the gadget in your hands and turn things to see how it works that such a long explanation is necessary. But think what it means by doubling the motor run on a rubber powered job so you can put it up twice as high. Or if you don't want to put it up so high, the second motor can have less strands of rubber permitting more winds for a cruising motor just to idle around the field until you pick up a thermal.

The possibilities offered by Mr. Roderick's brainstorm are practically unlimited. Its principles have great application in the helicopter field, where already they have proved successful. Furthermore the principles employed by the model can be applied as motive power for model boats. Certainly great things should be done with rubber jobs equipped with this automatic dual transmission.



sent to all squadrons equipped with the D.V so that ships could be brought up to strength.

Albatros D.VI

So far, all these changes in the D.V had been added to an existing design. They were rather crudely applied as emergency measures but production fittings were not created as part of the design until Albatros' last stab at keeping the firm name on top. The final plane to descend from the original D.I pursuit was the D.VI, entered in the first pursuit trials competition held at Johannistahl airdrome early in 1918.

The Albatros D.VI, both inwardly and outwardly, was merely a D.V model with all the extras included as integral parts of the design. Special fittings were provided for the leading edge strut brace which was retained instead of redesigning the lower wing structure. A new fitting was provided just behind the spinner on either side of the engine cowling to anchor two drag wires running from that point to the upper and lower fittings of the rear interplane strut. All models of the D.V had been equipped with a drag wire to the lower strut fitting, but the D.VI change incorporated the additional wire. When the 180 hp Mercedes engine was made standard in the D.Va no change was made in the plane's cooling system, but in the D.VI two wing radiators were fitted, each smaller than the single unit but giving a greater heat dissipation rate.

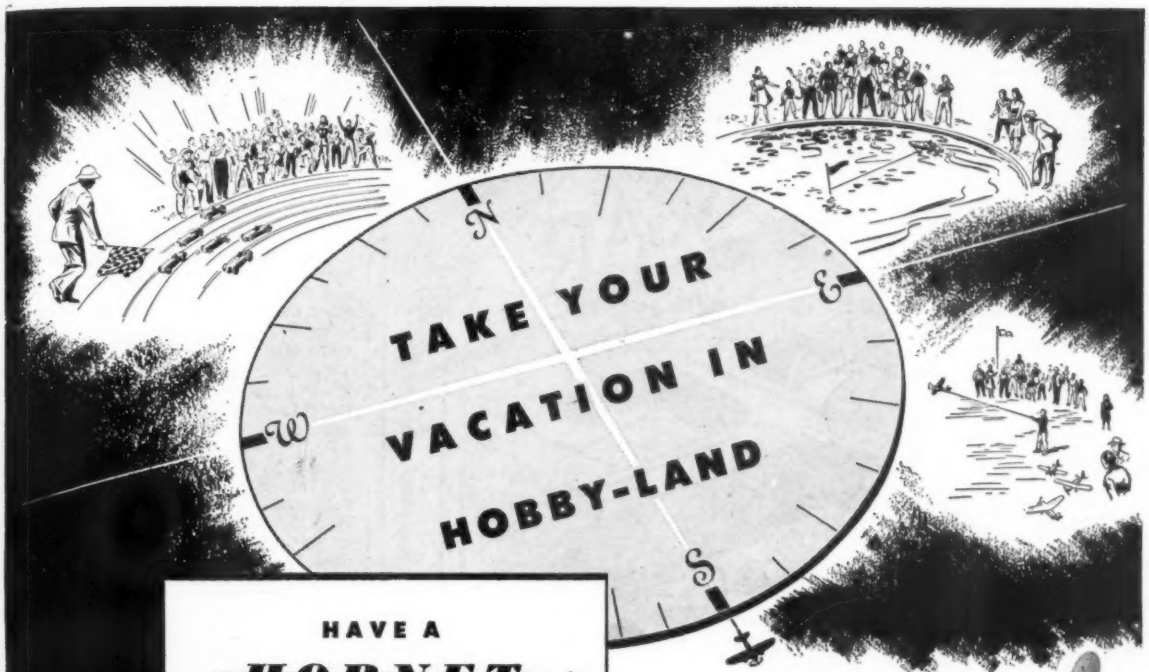
Rather than representing an honest effort to introduce an improved airplane, the Albatros D.VI was only a poor excuse for a pursuit ship to replace the already obsolete D.V. Obviously, the ship did not even stand a chance in open competition. The famed Fokker D.VII won the event hands down. This wrote finis to the Albatros company as a pursuit plane supplier although the firm did turn out some highly interesting experimental types during the balance of the war.

Structurally, the Albatros D.V and D.VI models were so similar to the D.III that an extended description of their frames is not required. The planes did exhibit, however, some rather obvious changes in view of the company's attempts to capitalize on a basic design. In this regard the wings can be considered dismissed by stating that they were the same as those of the D.III in the D.V model, but in late D.Va types the spans were reduced to 8.95 meters in the upper and to 8.70 meters in the lower wings by rounding off the tips a little more than previously. Wing area as a result was reduced to exactly 20 sq. meters. In both the D.V and D.Va the upper wing was brought down close to the fuselage, reducing overall height to 2.45 meters and gap accordingly.

Other changes in the D.V over the D.III were the more rounded rudder and fin contour, and enlargement of the horizontal stabilizer and elevator to improve maneuverability.

The D.V series fuselage was somewhat cleaner than that of preceding models, displaying more gradually curved dorsal and ventral lines and an oval instead of flat-sided crossection. As a production expediency in the D.V, lower wing panels were attached directly to fuselage fittings rather than to a fairing as in the case of the D.III. Measuring 7.30 meter in length, the fuselage was constructed of six longitudinal stringers and a number of bulkheads to form a framework which was covered with plywood panels much thinner than those of the D.III. D.V fuselage

(*Turn to page* 44)



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skin, made lighter to save weight, was covered with cloth doped on to bring its strength more nearly to that of the heavier material. Net weight saving, in spite of the heavier 180 hp engine, provided a D.V empty weight of 660 Kg., a gross weight of 885 Kg. Although lighter than the D.III at the gross figure, the D.V useful load was 15 Kg. less.

In view of D.V performance, this was a rather futile attempt to squeeze just a little more performance out of the basic design. Its top speed at 1,000 meters altitude was 187 kilometers an hour, and 133 kilometers an hour at 4,000 meters. In 2 minutes the D.V climbed to 620 meters and required an even 21 minutes to get to 4,000 meters altitude. Ceiling was 6,200 meters, representing very little improvement over similar D.III performance.

Eventually retired to training operations when production of the Fokker D.VII provided German aces with a badly needed first class fighting plane, the D.V Albatros can be said to have served faithfully, if not well. At one time the D.V along with its D.III ancestor ruled the roost as the standard German pursuit ship. That it was not entirely incapable of performing its duties is attested by casualty lists among Allied pilots. It is little consolation to know that had the same skilled German pilots been provided with first class planes, those casualty lists might have been even longer.

Crowning insult to the company who had blundered its way to fighter supremacy in 1917 was the German government's action forcing Albatros to build, on a royalty basis, the Fokker D.VII which had bested the Albatros D.VI. Unwilling to compromise on quality during the final months of the war, the Imperial Air Service saw that Fokker was paid well for every D.VII Albatros turned out for the Black Eagle!

Speed Made Easy

(*Continued from page 33*)

the ship which is burdened with extra weight.

Resistance is the thing to develop a healthy regard for if you covet speed trophies. Resistance begins at the spinner and takes its toll at every exposed surface between that point and the rear edge of the rudder. It absorbs more power than weight of the plane in most cases.

The writer has no intention of becoming involved in a controversy on streamlining in models, but he would state from experience that delicately engineered "airflow" surfaces are a waste of time below a certain size. This certain size covers most rubber models. The important thing to consider is "flat plate" resistance. Of a secondary nature, but still important, is "wetted surface" or area resistance.

Flat plate resistance consists of entering surfaces, or simply the profile of the model as viewed from the front. The smaller the area covered by a frontal view of the model, the less resistance. This small frontal area, so important to speed jobs, is achieved by using a small crossection fuselage, thin control surfaces and very narrow airfoils.

Wetted surface resistance is that set up by air flowing over the wings, fuselage and control surfaces. Its effect is determined first by the amount of surface

(*Turn to page 46*)

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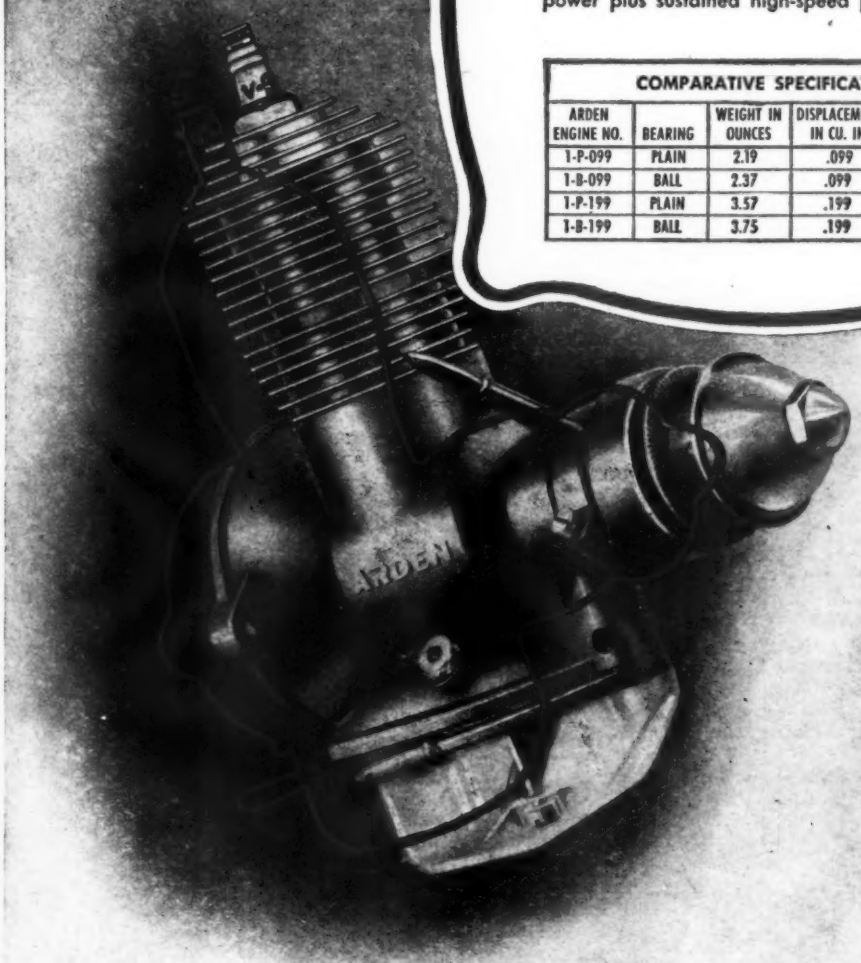

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it covers; second, by the smoothness of those surfaces. The amount of skin friction which results in wetted surface resistance is considerable at high speeds, but it can be minimized by doping and polishing all external surfaces.

Now let's build a speed model. Since torque is such a troublesome problem the best thing is to eliminate it. A glance at the photos and plans of the model accompanying this article will show how this can be done. Aside from the fact that counter-rotating propellers eliminate torque effect they also have the advantage of permitting all the power (minus slippage and bearing friction) to be converted into thrust without diverting any, through offset surfaces, to hold the model in level flight.

Begin construction with the fuselage which is easily made from an 18" sheet of 3" x 1/16" medium balsa. Soak the wood a few minutes in hot water and bend around a dowel or broom handle. Wrap with soft twine or gauze and allow plenty of time for the blank to dry in shape before removing and cementing the edges together. When dry, cement in discs of 3/32" stock at each end.

Wing, stabilizer and rudder are of profile construction which makes for easy and speedy building with practically no warpage trouble. Cut the outlines from medium 1/16" sheet and fill in ribs as shown. Cover all surfaces on both sides, water shrink and dope.

Rudder and stabilizer are pinned flat in order that they may dry with no offset of any kind, but the wing should be allowed to curve gently upward to provide a slight dihedral angle. Sand the leading edge of the wing to knife-edge sharpness before covering. This wing section, by the way, is a rubber model approximation of the airfoil used on the P-51 *Mustang* in which the center of pressure is located well toward the trailing edge. Therefore in balancing the model it will be found that the center of weight will come approximately in the center of the chord rather than one-third back from the leading edge. This makes for considerably more speed and irons out the zooming tendency usually compensated for by downthrust.

The wing pylon is built up of three pieces of 1/16" stock, cross-grained for strength. Use plenty of cement in mounting it to the fuselage.

Mount the rudder dead center on the upper side of the fuselage directly over the stabilizer mount.

Propellers are built up. Cut blades from hard 1/16" stock and mount in spinners at 45° angle to the thrust line. Be sure to make one left and one right hand prop. Good bearings and alignment are important so don't rush over this phase of construction.

Landing gear is light wire bent to shape and attached as shown on plans. Use plenty of cement here. Wheels should track evenly and rotate smoothly for R.O.G. takeoffs.

Test the model over tall grass with six strands of 1/8" flat brown rubber. Launching is done from an "underslung" position by holding both propellers, swinging the model forward and releasing. If properly built the plane will fly straight as an arrow with no tendency to deviate either right or left. After preliminary testing, power can be upped to twleve strands of rubber or more.

In competition it is a good idea to start the model quite a few feet behind the starting line in order that the props have a chance to bite into the air and overcome the initial inertia before hitting the measured course.

Pitch Checker

(*Continued from page 21*)

station along the shaft and also at the 3-1/2" station so that the instrument can be used as a true pitch prop checker as described in the Oct. 1943 issue.

Now calibrate the instrument by engaging the knife edges against a *flat* surface while having the blade plate preferably at the 3-1/2" station. Scribe an index line on the pointer at the zero mark of the dial. This method of calibration insures precision regardless of inaccuracies of previous assembly providing the hole in the dial for the shaft bushing has been accurately cut.

The following table of blade angles is used in connection with the blade angle checking instrument:

BLADE ANGLE CHART FOR TRUE PITCH PROPS

	RADIUS									
Pitch	1	2	3	4	5	6	7	8	9	10
4	32.5	17.7	12.0	9.0	7.3	6.1	5.2	4.6	4.0	3.6
5	38.5	21.7	14.9	11.3	9.0	7.6	6.5	5.7	5.1	4.6
6	43.7	25.5	17.7	13.4	10.8	9.0	7.8	6.8	6.1	5.5
7	48.1	29.1	20.4	15.6	12.5	10.5	9.0	7.9	7.1	6.4
8	51.9	32.5	23.0	17.7	14.3	12.0	10.3	9.0	8.1	7.3
9	55.1	35.6	25.5	19.7	16.0	13.4	11.6	10.2	9.0	8.2
10	57.9	38.5	28.0	21.7	17.7	14.8	12.8	11.3	10.0	9.0
11	60.3	41.2	30.3	23.6	19.3	16.3	14.0	12.3	11.0	9.9
12	62.4	43.7	32.5	25.5	20.9	17.7	15.3	13.4	12.0	10.8
13	64.2	46.0	34.6	27.4	22.5	19.0	16.5	14.5	13.0	11.7
14	65.8	48.1	36.6	29.1	24.0	20.4	17.7	15.6	13.9	12.6
15	67.3	50.1	38.5	30.8	25.5	21.7	18.8	16.8	14.9	13.4
16	68.6	51.9	40.3	32.5	27.0	23.0	20.0	17.7	15.8	14.3

(Radius and Pitch in any units—Ex: Inches for Model Plane Props)

To use the instrument, mount it on the edge of a workbench by means of screws through the mounting holes and measure the blade at the inch station nearest the tip; be sure the flat side of the prop is toward the instrument. Record the angle reading and measure and record the angle at each inch station between the first one measured and the hub. As you approach the hub, the blade face may be convex instead of flat and will require some approximation. The station 1" from the hub is not of great significance in props 10" to 16" in diameter so it can be disregarded for all practical purposes.

After the readings are recorded you can compare them with the blade angle chart to determine the pitch of the prop and whether or not it is true pitch. If it is true pitch, then the angles should match one of the horizontal rows of angles on the chart. You may find that by subtracting the same number of degrees from each reading, the resulting set of angles match those on the chart for a given pitch. For instance, if the recordings are: 53.4°, 34.0°, 24.5°, 19.2°, 15.8°, and 13.5° for a 12" prop, subtracting 1-1/2° from each reading results in the following set of angles: 51.9°, 32.5°, 23.0°, 17.7°, 14.3°, and 12.0°, which indicates that the prop is 8" true pitch plus an angle of attack of 1-1/2° which is satisfactory as far as efficiency of the prop is concerned. As a matter of fact, an angle of attack of 2° or 3° will be found more efficient than true pitch; more than 4°, however, being too high an angle of attack for most prop blade airfoils. On the other hand, if it is necessary to subtract a certain number of degrees from each reading to make the set of readings match a set of angles on the chart, then the prop is true pitch with a negative angle of attack and less efficient than a true pitch prop.

If adding to or subtracting from the readings does not result in an angle pattern that matches one on the chart, then you can be sure the prop is even less efficient, with the degree of inefficiency increasing in proportion to an increase in deviation.

Flash News

(*Continued from page 2*)

AFTER MANY, many months of experiment, a successful television system has been perfected for use of guided missiles. The device, developed by Army Air Forces at Wright Field, is known as the *Jeep* and consists of 340 lbs. of airborne equipment including a television camera, a camera control unit, a radio transmitter and a dynamotor power supply unit. Mounted in a guided missile, the *Jeep* transmits a television picture of what it "sees" back to the ground or air station which directs the missile directly into the target. This is the control system for the guided missile.

ALL OF THESE elements are here, are practical and are ready for installation into an airframe capable of supersonic speeds—and the Air Materiel Command at Wright Field has that: the Bell XS-1! First of the craft designed and built specifically for supersonic speeds, the tiny thin plane has been thoroughly tested in glider form and installation of the rocket power plants is now being made. First tests will be held at Muroc Army Air Base, Calif. where a human is expected to travel at 1,000 mph for the first time in history early this summer!

THE MIGHTY Hughes *Hercules* has gone down to the sea! After four years of time and $20,000,000 worth of effort, the largest aircraft ever built has passed one of its last and biggest obstacles: transfer from Hughes' Culver City plant to the special docking facilities at Terminal Island, 28 miles away. The two 34-ton wing panels were the first to go, traveling along the highway on monster dollies pulled by seemingly tiny trucks. A total of 23 public utility companies were called upon to re-route telephone and power lines along the route while 57 highway patrol police guarded the mile-long caravan. The wing job required two days, traveling at a steady 2½ mph, and the movement of the 62½ ton fuselage followed. The 320 ft. span giant will be assembled at a $200,000 graving dock especially designed for the purpose. First taxi tests are not expected until the first of next year following which the world's greatest flying machine will take the air. The moving bill came to a neat $140,000, just another item in one of the most widely discussed aviation projects in 40 years of flight.

THANKS TO THE unholy technical genius of the Nazi scientists, American physicists are now able to explore the outer atmosphere for the first time in history. The Navy revealed details of its plans for fully instrumented flights to an altitude of more than 500,000 ft. of captured V-2 rockets. The 3600 mph missiles will carry instruments designed to transmit to earth information on pressure, temperature, ion density, ultraviolet rays and cosmic rays at this great altitude, far higher than even sounding balloons have penetrated. The Army Air Forces, Army Ordnance Department, Army Signal Corps, Naval Research Laboratory and several universities are cooperating in the tests, which will take place throughout the remainder of the year at White Sands Proving Ground, N.M.

AAF HAS faithfully continued General Arnold's last assignment of a mission issued just before his retirement as Chief of the Air Forces: smash every aviation record possible! The long distance B-29 *Superfortress* record flights were just a warmup and AAF has now broken the following records: Speed for 1000 kilom-

(*Turn to page 50*)

eters: 462 mph by Lt. Henry Johnson in a Lockheed P-80A *Shooting Star;* speed for 2000 km: 440 mph by Lt. John Hancock in a P-80A. Speed over 1000 km with 1000 kilogram load: 369 mph by Lt. E. M. Grabowski in a Boeing B-29 *Superfortress;* this same performance was accomplished with speed for 1000 km with 2000 kg load; 1000 km with 5000 kg load; 2000 km with 1000 kg, 2000 kg and 5000 kg loads. Speed over 2000 km with 10,000 kg load: 350 mph by Capt. J. D. Bartlett in a B-29; 1000km with 10,000 kg load: 358 mph by the same pilot. Helicopter speed for 20 km: 110 mph by Lt. Col. K. S. Wilson in a Sikorsky R-5; helicopter endurance of 9 hrs. 33 min. 7 secs. by Lts. Vavricka and Bloom in an R-5 and a helicopter distance record of more than 700 miles by Maj. Fred Cashman, also in an R-5.

ACCORDING TO no less an authority than Air Commodore Frank Whittle, inventor of the jet propelled airplane, the Allies learned nothing of value from examining German jet airplanes and turbo-jet engines. In an exclusive interview with "Flash News," Commodore Whittle has revealed that the V-E Day German jet engines were inferior to the original Whittle W-1 turbo-jet engine; that Nazi metallurgy was far behind those of the British and Americans in the search for temperature resistant alloys; that the ducted fan shows tremendous promise in the range of speed from 300 to 450 mph; that turbo-jet propulsion is capable of supersonic speed; that all airlines should be operating jet transports at 500-600 mph within 5 years; that the Gloster *Meteor* has the same range as the *Spitfire* at 30,000 ft.; and that the new DeHavilland flying wing with turbo-jets should prove the fastest aircraft in the world shortly. Whittle, in America on a two months lecture tour, revealed he had visited this country in 1942 and worked with General Electric and Bell Aircraft engineers in Boston, where he was known as "Mr. Whitely." Whittle announced he has resigned from Power Jets Ltd., due to differences with the Government, which has taken it over, and that he plans to remain with the R.A.F. indefinitely.

IN A MOVE held in some quarters to be an admission of British superiority in gas turbine design, Phillip B. Taylor, formerly vice pres. and gen. mgr. of Wright Aeronautical Corp., has formed Taylor Turbine Corp. and obtained licenses for manufacturing Rolls-Royce *Nene* and *Derwent* turbo-jet engines. A plant will be built in northern New Jersey and production is planned for early 1947. The *Nene* is rated at 5000 lbs. static thrust and is the most powerful jet engine now in production. The Hispano-Suiza Co. in France has also licensed the jet engine and a new plant is being built in China by Rolls-Royce for quantity production.

PERHAPS IT'S only an excuse to mention Jane Russell in this column but the fact remains that Howard Hughes has just purchased a $100,000 Navy blimp for use as a flying neon sign to advertise his much discussed motion picture *The Outlaw.* The blimp will tour American cities and then make appearances in England and Europe.

GLENN L. MARTIN CO. is now at work on a giant landplane version of the 70-ton *Mars* flyingboat. The cargo liner is being developed for AAF and can be used at a troop-carrier accommodating 136 fully equipped infantry over a range of 2000 miles. The new plane will utilize the wing and powerplant installation of the *Mars.*

(*Turn to page* 52)

AAF AND THE National Geographic Society are cooperating in an extensive program of cosmic ray research utilizing a Boeing B-29 *Superfortress* as a flying laboratory. The B-29 is equipped with special devices including Geiger counters for measuring cosmic ray activity at different altitudes at various areas around the country. . . . And just in case you're looking for a good case of insomnia, here is why the Army (B-29) and Navy (V-2) are studying cosmic rays: atomic fission releases about 200,000,000 electron-volts of energy; cosmic rays release just 6,000,000,000 electron-volts of energy!

ONE OF THE major reasons for the drastic rise in submarine sinkings during the war in the Atlantic was the use of the *Doodle Bug*, a magnetic airborne detector that registered minute quantities of magnetism. Trailed from a torpedo plane flying low over the water, the detector registered the presence of submarines lying far below the surface. The Navy Department is now making extensive plans for use of the *Doodle Bug* as a locator of iron ore and oil sands far beneath the earth's surface. Hundreds of square miles may be surveyed in only a few hours through use of this "aerial divining rod."

EVIDENCE OF widely-diverging points of view is available from (1) U. S. Military Academy which announced it has discontinued training pilots as a part of the regular West Point curricula with the class just graduated; and (2) U. S. Naval Academy which announced that beginning next term it will include flight training as a regular part of the Annapolis curricula!

ONE OF THE postwar planes really worth watching for is the new twin engine *Ercoupe* now in the mock-up stage and due for construction shortly. The new model will seat five passengers and will be powered by two pusher-mounted 125 hp engines. It will have the same spinproof, two-control feature as the familiar two place *Ercoupe*. Fred Weick, Erco chief engineer, has been nursing the new "baby" along for many months under careful wraps but is more proud of it than his famous prototype spinproof design. The five place model will cruise about 170 mph, have a 600 mile range and get about 16 miles to the gallon, or the same as your five place deluxe limousine.

RELEASE OF PHOTOS on the Douglas XB-43 (see page 2, August 1946 issue MODEL AIRPLANE NEWS) shows it to be simply an XB-42 *Mixmaster* with turbo-jet engines replacing the Allison engines in the front of the fuselage. Air intakes extend along either side of the "bug-eye" dual canopies and the exhaust merges into a common jet at the tail. With a 500 mph top speed, it is easily the fastest bomber ever built. No plans have been announced for its production. A newer model will include more turbo-jet engines suspended from the wings.

AAF IS AT work on a guiding mechanism for use on a 12,000 lb. bomb although progress to date has been slow. The control used on the GB-series of 1000 lb. bombs were able to deflect the craft only 2500 ft. after a 15,000 ft. drop and the problem of "moving" the monster 6 ton design in the air is complex.

AAF HAS released top speed of Republic XP-84 *Thunderjet* at 592 mph at sea level and 578 mph at 30,000 ft., thus dampening many high hopes that this latest jet fighter would prove a record breaker over the 606 mph British Gloster *Meteor*.

CURTISS-WRIGHT CORP. is now at work on a single jet fighter identified by AAF as the XP-87.

Design Forum

(*Continued from page 27*)

relative to the part of the wing that is more forward. In this case, the center of the wing is farther back than the tips. Consequently the center of the wing should have less angle than the wingtips. In other words, the wing should be washed in. In level flight the center of the wing, for instance, will probably fly at 0° angle of attack while the wing tips are at 3°. The greater part of the airplane weight obviously will be supported by the wingtips which give greater lift because of their greater angle.

When the airplane noses up, the lift on the center section increases greatly, the lift on the tips only slightly. This causes the center of pressure to move rearward and produce a correcting moment. In this case the center of the wing actually acts in a similar manner to the stabilizer of a normal plane.

With the wings swept forward there is one advantage which at first might not be noticed. As the plane noses up and approaches the stalling point the tips stall first, causing the center of pressure to move rearward suddenly and right the plane. So we see that though tip stall generally is undesirable, in this case it is an advantage. Consequently, we do not see why Mr. Prochaska bent down the wingtips because this will have a tendency to reduce tip stall. We believe the ship will be more stable if the tips are perfectly straight.

To increase the righting effect, we suggest that the wings be swept forward even more than shown in the drawing so the center of pressure movement will be greater with changes in the angle of attack. We believe it would be worthwhile to make experiments with this design as a gas model. It should prove an excellent flier provided stability can be maintained.

Mr. Prochaska has laid out the design well in other respects. He has placed the wing on a level with the thrust line, and the center of gravity is only slightly below it. With this arrangement of thrust line above C.G., the model will have a tendency to glide flat and not dive in when power is off. The driving force during the glide is gravity which acts at C.G. This being below the thrust line the driving force forms a couple with the drag on the plane to nose it up, thereby flattening the glide. To give proper balance, the motor should be installed directly to the rear of the cabin with batteries and coil arranged to bring the center of weight at the point marked "C.G." on the drawing. If the weight is too far back the plane will have a tendency to stall; if too far forward it will dive or not leave the ground at all.

Mr. Prochaska has wisely given his plane plenty of fin area. This is necessary to prevent sudden yawing due to air gusts buffeting the wingtips set at increased angle of incidence. We suggest that the wing dihedral be increased to at least 9°; this is equivalent to an elevation of each wing tip of 3/4" for every foot of span.

We hope that when Mr. Prochaska builds his model that he will write to "Design Forum" and tell us of his results.

* *

John Marinelli of 221 Lindsley Ave., South Orange, N.J., sent a very interesting design (Fig. 2) of a pursuit ship, which shows considerable originality. It is different from most pursuit ships in

(*Turn to page 57*)

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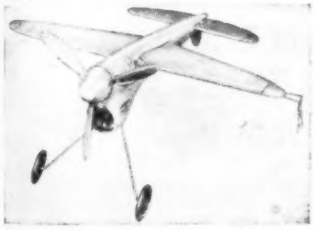

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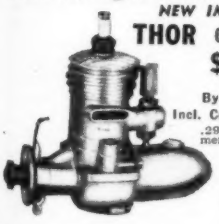

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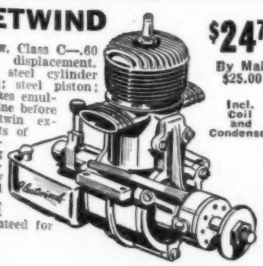

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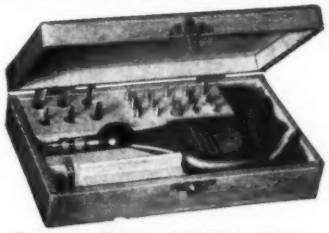

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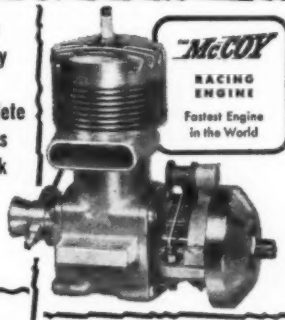

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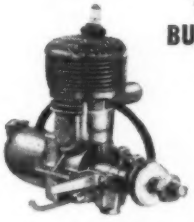

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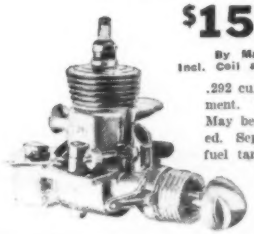

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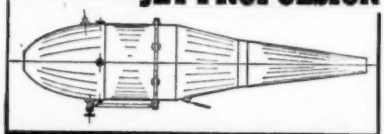

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that the wing is high, level with the top of the fuselage. This increases the aerodynamic efficiency considerably, since the top surface of any airfoil is the most important. In low wing airplanes the fuselage interferes with the airflow over this surface to a greater extent than in high wings like Mr. Marinelli's plane, which will be steadier and more stable in flight.

When a low wing airplane turns and banks steeply, the airflow over the upper surface of the low wing is often disrupted by the fuselage due to slight skidding. If the plane slips in, the airflow over the highest wing is often disrupted. In fact, sudden breaks in the airflow over either wing may be produced causing sudden loss of lift on one side or the other. In some cases this tends to cause erratic performance. This is not possible in high wing types. In fact, high wings unquestionably would be used to a much larger extent if they did not have one undesirable characteristic which is present in Mr. Marinelli's plane, namely, the high wing shuts off the downward vision of the pilot. As a result, this ship can be used only as one particular type of a pursuit ship, an interceptor.

Interceptors usually attack an enemy who is above, and who therefore would be in full view of the pilot. It would be nearly impossible to dive on an enemy with this type of craft. Therefore, one of the chief characteristics this particular design should have is a tremendous climb. The high wing contributes to this because high wing ships usually climb much more steeply than those with low wings. Mr. Marinelli has also specified a completely inclosed engine with sufficient power to turn two three-bladed counter rotating propellers.

The general wing plan form also would be efficient for an interceptor. One of the notable features is the high stabilizer. Mr. Marinelli has done well to place it in this position, well above the wash of the wing. The ship is comparatively close hauled, that is, the stabilizer is quite near the wing; if the stabilizer were set low it might be blanketed by the wing and lose its effectiveness. It is vital that this should not occur especially when landing.

Considerable fin area is provided by the deep fuselage back of the wing. Though it is perhaps convenient from a structural standpoint to carry the low line of the fuselage nearly horizontal, rearward of the wing, it is possible that this will provide an excessive amount of fin area that will impair maneuvering. Also when banking the nose has a tendency to drop when there is too much fin area. It would be better to curve the lower line of the fuselage upward somewhat. This would not only reduce the fin area to the proper amount but would also reduce weight slightly.

The designer also suggests that jet engines can be used effectively on this plane, slung from beneath each wing. In such a case the exhaust from the jets would not interfere with the stabilizer in its high position. On the whole Mr. Marinelli has suggested an excellent little airplane. In fact its performance could readily be tested by building and flying an exact scale gas model including these features.

• •

A very novel model glider is presented by S. R. Walton, 1302 Tryon Street, High-point, N.C. Perhaps we should not characterize this as a glider but rather as a jet plane because it uses a water charging capsule that contains carbon dioxide under very high pressure. This is inserted

(*Turn to page* 59)

in a compartment at the rear of the cabin, as shown in the side view of the drawing (Fig. 3). When a small hole is made with the point of a pin in the end of the neck of the capsule a jet of CO-2 gas rushes out at high velocity. This gives considerable driving power and causes the plane to climb steeply. When the charge of carbon dioxide is expended, the plane dips into a glide.

Mr. Walton says: "It climbs in a steep spiral and rolls out beautifully at the top. Once the glide was established while testing it continued to glide beautifully. However, the ship is slow on recovery from a dive." He wants to know the reason for its slow recovery.

Usually this condition results from one thing, namely, too little difference in angle between wing and stabilizer. If the C.G. is high it will also contribute to slow recovery from a dive. To insure a quick pull-out, make certain the C.G. is below the center of resistance because the C.G. provides the pulling force during the glide. When it is low it tends to nose the plane upward. The difference in angle between the wing and tail should be at least 2°, possibly 3°. With such a setting the plane should recover quickly. This may require a change in the line of thrust, that is, the longitudinal axis of the CO-2 capsule.

With the thrust line in the high position indicated it produces a nosing-over tendency with power on, when the axis is parallel with the stabilizer chord. To obtain the proper balance of the ship during power on and during the glide some experimentation may be required. However, start with a definite angle between wing and stabilizer and then adjust the angle of the capsule until it both climbs and glides satisfactorily. It is suggested that the capsule be placed so its axis is parallel with the wing chord, or at the most 1° negative to it. This causes the jet to pass downward slightly at the rear producing a slight pressure on the top of the stabilizer under power so as to cause a nosing-up tendency to overcome the nosing-down tendency produced by the high thrust line.

This arrangement is used commonly on large aircraft when motors and propellers are placed high. The C.G. in any case should be located 1/3 of the wing chord back from the leading edge. While determining the proper adjustment keep the wing, stabilizer, and C.G. fixed in the positions mentioned above and change the axis of the CO-2 container until the craft flies satisfactorily.

Mr. Walton is pioneering here in a branch of model flying that may prove very popular. Launching gliders by means of towlines has always been unsatisfactory, tending to lower the dignity of the glider to the level of a kite. Use of jet propulsion for a quick fast climb to altitudes where the glider may strike soaring currents adds many advantages and is much more realistic. The one drawback to this form of jet is the expense. A new capsule must be used for each flight and these often are not obtainable. Nevertheless it provides a chance for some ingenious model builder to develop a jet unit that will be cheap and convenient.

When submitting designs address them to "Design Forum," c/o MODEL AIRPLANE NEWS, 551 Fifth Ave., New York 17, N.Y.

We hope model builders will loosen up their pens and send some new and tricky designs for discussion. We would like to include at least one model design each month.

Newsletter

(*Continued from page 6*)

of America's foremost gas model designers going flat on their respective faces in a lake while attempting to get their models away keep you laughing for a week.

Whatever you do, don't underrate R.O.W. flying. There is so much theory and try-and-try-again stuff associated with pontoon work that the average modeler learns more in a day by this type of competition than he would in a year of standard land gas events.

And while we are on the subject of rise-off-water gas modeling, we must tell you of what we believe to be the first boat ever designed for R.O.W. flying. It was designed and constructed by Everett N. Angus, A.M.A. vice president for District II, director of the famous Philadelphia Flying Circus, and leading model aeronaut from south Jersey for many years. Mr. Angus has been flying R.O.W. craft for the past several years up Cape Cod way. He has developed several designs especially for water work and has produced some magnificent 16 mm. films of his ships taking off unassisted and landing on Massachusetts Bay. As a matter of fact, Mr. Angus has developed the art of R.O.W. flying to the extent that he now is working on boats to help his flying, rather than on the models.

The South Jersey leader found that the average small boat was inadequate for R.O.W. flying. First of all, there was no proper place on which to set the model between flights or while working on it. If you placed it across a seat the breeze might knock it overboard into the water. If you tried to set it down in the bottom of the boat the wings usually took a beating from the sides, oarlocks, or what have you. So waterman Angus took matters into his own hands and has come up with a new design boat. There is plenty of space for the model. Wings or floats are not damaged by sides or bottom of the boat. The craft is designed to permit working over the side or launching the plane without the danger of overturning. All in all, his boat is a most practical affair although somewhat unconventional in appearance and construction.

As one of the designer's most famous models was named the *Maybe*, it has been suggested he christen the boat the "Maybe-She-Floats." To this Mr. Angus turns a deaf ear. He says as long as the boat conforms with the official regulations governing R.O.W. models he will be satisfied. The requirement: that an outdoor R.O.W. job demonstrate its seaworthiness by floating unassisted at least 30 seconds!

* * *

BOUQUET-FOR-THE-MONTH: With your kind permission we'd like to award the good conduct ribbon this issue to Johnny Davis, the same peppy individual who authors the West Coast column in this publication each month. Johnny has been very interested and busy in trying to line up a lot of big contests for the Western enthusiasts for the past several months.

Time and time again he has demonstrated his willingness to work his head off for the modelers out there and coordinate their activities with meets and rules followed by other parts of the country.

To Johnny—a great big hand for the work he is doing and congratulations to MODEL AIRPLANE NEWS for snaring him as its Western reporter.

Airways

(*Continued from page 31*)

assistance are asked to contact the Academy of Model Aeronautics, Air Education Committee, 1025 Connecticut Ave., N.W., Washington 6, D.C.

* *

Picture No. 1 shows an attractive sport model designed and built by Adolph Henkel, Route 2, Box 359, Lancaster, Calif. He tells us this is a very steady and consistent flyer which he designed for beauty as well as for flying qualities. It has a span of only 20 in. and is equipped with air wheels as can be seen in the photo.

No. 2 is a control line Piper *Skycycle* that was constructed in a total of one month building time by George Bruun, 2025 H St., Eureka, Calif. He gives us no details on this model except that it is powered by a *Forster* 29.

J. Bierens, Theresiastraat 428, The Hague, Holland, sent in No. 3 which he states was a winner in a gas model contest held in 1944. We don't know whether this was a winner in the beauty or performance category but it is certainly a nice job of construction.

(*Turn to page 62*)

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In the May issue of MODEL AIRPLANE NEWS (page 10) we published a picture of a twin motor A-26 model. We have been informed by the builder, Dean C. Harter, 2544 Madison Ave., San Diego 4, Calif.—whose name incidentally was incorrectly spelled in the original presentation—that this ship which is shown in No. 4 is a very successful flyer. The plans for the model were drawn up from a small three view of the big ship that was found in a past issue of MAN. Dean tells us it took him 12 hours to make the drawings and 205 hours more to build the model. Two *Ohlsson 60's* are used for power and to date all flights have been successful and without crackups. The plane is of balsa construction and covered with linen. During the *San Diego Airliners'* contest last fall the model flew for 8½ min. and for this reason was demerited 25 points for overtime flight. Dean confesses that he forgot to set the timer before the flight started. He finally ended up with 59 points while the winner of this event had 70 points.

No. 5 is an oversize *Whippersnapper*, original plans of which appeared in Jan. 1945 MAN. Practically no changes were made in the original plans except that they were enlarged 1½ times and the model is equipped with an *Ohlsson 60* and two-speed control. Its builder, M. R. Leonhardt, P.O. Box 185, Richmond, Ind., tells us that the cruising speed with this power is around 60 mph and landing speed 35 mph. The model weighs in at approximately 6½ lbs. with a full tank of gas and handles very well in weather that is bad enough to keep many of the lighter weight planes grounded.

Louis Bonnett writes in from Douglas, Alaska that he has never had the satisfaction of seeing a model in "Air Ways" from his particular locality. We hereby correct this oversight by printing No. 6, a P-51. Plans for this model came from an old issue of MAN and the ship made a number of good flights after which many additional details, such as rockets and bombs, were added and the model is now used only for display.

Another MAN ship, this one from the Feb. 1946 issue, is shown in No. 7. It is the popular contest winner *Inez Jane* which was constructed by Fred Verrier, 6115 Bellona Ave., Baltimore 12, Md. who equipped it with removable elevator and wings and a free wheeling prop. Fred states it has a good climb and a beautiful glide and he has great hopes for it in the many contests this season. Fred complains he has never seen Baltimore mentioned in "Air Ways" and we are sure this printing will remedy the situation for him.

The model of the famous old Gee Bee *Flying Barrel* in No. 8 was built by Gerald M. Barden, 626 Rosemary Lane, Burbank, Calif. It is *Ohlsson 60*-powered and when first tried out at the National Sportsmen's Show in Los Angeles amazed all who saw it fly, including the builder. The model weighs 3¼ lbs. and is built to a scale of 1½ in. to the foot. The glide is extremely flat and of course rather fast. Gerald is a model builder of many years experience and is currently president of the Lockheed Model and Hobby Club.

The twin engine free flight model in No. 9 was built by Dick Young and Leonard Steiner, 38 Wolcott St., Le Roy, N.Y. and took them all last winter to construct. At the time the picture was sent in the model had just been finished; they had not as yet tried it but they have confidence it will prove to be a beautiful flyer.

(*Turn to page* 64)

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Cpl. Ernie Marsden, 456779, 86 Hasland Rd., Chesterfield, England, sent in No. 10 which shows a beautiful Wakefield model constructed by his fellow flier, Cpl. Kerry, who has been unable to try the ship out as yet because of the shortage of rubber. This is an original design and we hope Cpl. Kerry will have a chance to try it out and let us know the results.

The very unusual model in No. 11 was designed and built by Franco Conti, 252 Corso Peschiera, Turin, Italy. This model is more or less of the canard type since it will be seen that the smaller of the two wings is in the front and the ship is powered by a diesel (or more properly, compression ignition) type of engine. This particular ship uses an *Elia* motor of 4 cc displacement and the spread of the larger wing is 5 ft.

The free flight gassie in No. 12 was designed and built by J. L. McLarty and has a 52 in. span with a wing area of 342 sq. in. It is powered by a *De Long 30* and weighs 25 oz. Note that the fin is set ahead of the stabilizer in this ship; this was done to prevent any change of setting when putting the stabilizer in place or adjusting it.

NEWS OF MODELERS

Guy Borge, 20, who edits a model column in a Lyons, France newspaper, is eager to correspond with an American modeler of his age who has a reading knowledge of French. Guy lives at 25 Qual St. Vincent, Lyons and assures our readers that he is able to read English fluently.

V. E. Winsley, 5 Berestede Rd., Hammersmith, London W6, England, informs American model fans who would be interested in exchanging ideas and literature with him that he is at present flying a couple of gas models, also a very interesting diesel job whose motor he secured on the continent.

An aircraft recreation instructor in the Air Training Corps, Allan R. Love, is interested in contacting a modeler who wishes to exchange aviation magazines and books. Address Allan at Sefton, North Cantebury, New Zealand.

Another New Zealander, R. R. McArthur of 33 Kowan Rd., One Tree Hill, Auckland S.E. 4, writes that he is willing to exchange kits, plans, magazines for similar products of American make.

Kenneth Jones, 18, a member of Air Training Corps, wants to get in touch with a pen friend of his age to discuss aeronautical matters. You fellow model enthusiasts can contact Kenneth at 108 Smallshaw Lane, Ashton-u-Lyne, Lancashire, England.

M. E. R. Osborn, 9 Grosvenor Villas, Claremont Rd., Bath, Somerset, England, asks us to place his name on our list of hopeful correspondents-to-be.

Club News

California

East Bay Aeroneers Assn. holds high expectations for their annual free flight gas contest to be staged at Livermore on Aug. 11. Sec.-Treas. Dale Root informed us that trophies, motors and merchandise are in the prize lineup.

(*Turn to page* 66)

BIG TIME *Fresno Gas Model Airplane Club* event was the 7th Annual West Coast Championship Contest on June 30 for free flight gas models only. Modelers flew their ships in Class A, B, C and Junior events, staged at a flying field 13 miles southwest of Fresno.

Beautiful flying distinguished the F.G. M.A.C.'s monthly gas model series of events on Apr. 23, for the fellows, in preparation for the championships, aimed toward perfection of flights, trying out new ideas, etc. Results were:

Class A—1. Dick Beggs. 2. Henry Vincent. 3. Ronald Mosier.
Class B—1. Russ Spacy. 2. Charles Garabedian. 3. Henry Vincent.
Class C—1. Rae Farrar. 2. Jack Tiftic. 3. Ralph Mower.
Juniors—1. Henry Vincent. 2. Henry Vincent. 3. Ronald Mosier.

The monthly glider program produced the following decisions:

Hand Launched—1. Lassig. 2. Vincent. 3. Warner.
Catapult—1. Lassig. 2. Warner. 3. Vincent.
Towline—1. Crowder. 2. Balekian. 3. Vincent.

NORTHERN and Central California model fans, with the aid of perfect weather and a few good thermals, put over the *Sacramento Skyoneers'* annual contest with a bang. A rule governing the meet was 3 flights totaled with 20 sec. engine run and a limit of 5 min. per flight. The judges handed in these decisions:

Class A—1. Jerry Johnson. 2. Tom Jenkins. 3. John Drobshoff.
Class B—1. Dale Root. 2. Bill Davis. 3. John Walton.
Class C—1. Mario Bertolucci. 2. Paul Nieto. 3. Paul Romak.
Juniors—1. John Walton. 2. Norman Peterson. 3. Al Tribolic.

A FLEDGLING model group which has started out on the right foot is the North Hollywood Model Club. The thirty-odd members listed on the club roster are endeavoring to secure a good field for free flight flying and plan to sponsor a big contest later this year.

A SEPT. 15 DATE has been set for *Silver Falcon Model Airplane Club's* free flight gas contest at Fleishman Polo Field in Santa Barbara. AMA sanction has been established and entries limited to residents of Santa Barbara, San Louis Obispo and Ventura counties. Over $100.00 in cash prizes, merchandise and trophies comprise the all-important award list.

TEMPLE CITY will soon see the formation of a model club, its first in this vicinity, with AMA affiliation. Val Yookum writes that he and his fellow model builders plan to sponsor local contests and eventually become a regular part of West Coast competition.

ADDITIONAL DETAILS on the Air Scout Show in May, sponsored by San Francisco Recreation Dept., showed a general cleaning-up by the *Frisco Pterodactyls* as far as winning results were concerned. First places in the junior scout division and the junior non-scouts were taken over by Noel de Nevers and Eddie May; Donald Miller and Russell Scott were top men in the cub and non-cub categories. The exhibition scale model event found Bob Christennberry in first place with his Boeing P-26A model.

THE *National City Aerowolves*, in existence only a short time, hold regular meetings on Friday afternoon, when chiefs Jamie Seebold and Skipper Stone preside. The *Aerowolves* have formulated their own contest rules applying to gliders, rubber powered ships, gas models and solid scale jobs.

LEONARD ZOGORTZ JR., a member of another new California club, *Barstow Prop Busters*, reports on election of officers: Larry Goodspeed, Pres.; Bill Farr,

(*Turn to page* 69)

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The whole Casalaire assembly job is new, different and exciting... intrigues both expert and novice alike. Yet its precision designed sections make it remarkably simple. You can't go wrong. All materials and easy-to-read plans are provided, including a generous supply of rivets... everything you need except the power plant.

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Wing span, 45"; length, 30"
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CONTROL LINE BEGINNERS

THOSE readers who wrote in expressing interest in the Fury III model pictured in Jack Luck's article on Control Line Flying in the April 1946 issue of MODEL AIRPLANE NEWS will find plans for an even newer version, the Fury IV, in the October issue.

Vice Pres.; Dick Hartwick, Secy.; Bobby Hartwick, Treas. This group is sponsored by the local Kiwanis Club with R. D. Willoughby in the advisor capacity. An indoor program was held a short time ago; outdoor control and glider contests are in the offing.

Illinois

Trophies for Class A, B & C entrants in speed, stunt, motor control and combat events, plus special prizes for outstanding models and performances, will go to winners in the Illinois Valley Tether Championships planned for Sept. 15 at Peoria. The ball diamonds of Glen Oak Park have been made available by the Park Board for the big event. Write to Morgan Baldridge, c/o Hobbymodels, 106 S. Monroe, Peoria, for further information.

THE *Pontiac Prop Twisters* finds its first voice in "Club News" through Eugene Lauth, Vice Pres., who writes us that his club was formed in March under the sponsorship of the local Elks Club. The *Twisters'* first meet, for free flight gas models only, was staged in June with highly successful results.

Iowa

June 29 and 30 were festive days in Marshalltown, for residents witnessed and participated in the 1946 Tallcorn State Model Airplane meet, the eighth annual contest of its kind. Sanctioned by the AMA and open to all model builders in the U.S. who were academy members, this first postwar Tallcorn contest attracted nine hundred entries, with participants competing for $1000 in cash and merchandise prizes. Wallace R. Blake directed the nine-event meet.

Indiana

Leonard Rylander adds his club's name, the *Calumet Model Builders Assn.*, to the fast growing list of new clubs. Leonard tells us that most of the members come from Hammond and are exclusively control line fliers.

GLENNA WILLIAMSON reports the following results of the June 9 *Anderson Johnnies'* contest:

U-Control Stunt—1. Harold Tremps. 2. Gordon Harris. 3. W. De Mougin.
U-Control Speed—1. Sam Armstrong. 2. Homer Brown. 3. Bernard Stellhorn.
Class A Free Flight—1. Laurence Lobkamp. 2. Bob Larsh. 3. James Bennett.
Class B Free Flight—1. Bob Williamson. 2. Herman Batt. 3. Bill Keough.
Class C Free Flight—1. James Bennet, Sr. 2. Bob Goodwin. 3. Bob Williamson.

Kansas

Wichita's Central States Model Airplane Meet announced in Aug. "Club News" for Sept. 1 & 2 emerged instead as the Nationals, details of which were found in Aug. MODEL AIRPLANE NEWS on page 52. Under the sponsorship of Wichita Kiwanis Club and Y.M.C.A., the meet was extended to include Aug. 30 & 31 and was officially sanctioned by the AMA as the National Model Airplane Meet for 1946.

Massachusetts

The *Cape Cod Cloud Chasers*, Brockton's model club, will hold a state-wide control line contest on Sunday Aug. 11. AMA sanction has been obtained and AMA rules will govern flight performances and decisions. Entry blanks may be secured from Frederick Andrews, Jr., 63 West St., Whitman.

Michigan

Reorganization of the *Balsa Buzzards* of Lansing, after several years of inac-

(*Turn to page* 71)

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DIAMETER — 2 in.
LENGTH — 27 ⅛ in.
THRUST — 2 lbs. (plus)
CG FROM NOSE—5¼ in.
STARTING — Hand tire pump
SPARK PLUG — Champion V-3
FREQUENCY— 210-230/sec.

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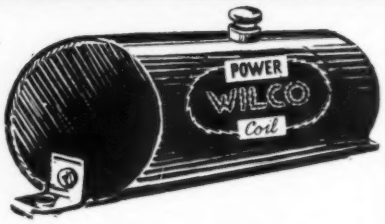

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tivity during which its members "enjoyed the hospitality of the armed forces", took place recently and a full schedule of model activity has been planned for this season. Control line and free flight contests will be held regularly at the club's fine flying field. The following officers hold forth at Wednesday night meetings: George Warren, Pres.; Chuck Ripley, Vice Pres.; Jack Pfeifer, Secy.-Treas. The *Buzzards* are anxious to get acquainted with all modelers in the Lansing area—for full information write Jack Pfeifer, 1044 Sunset Lane, East Lansing.

THE *Detroit Balsa Bugs* were well represented in a recent three-day contest sponsored by Metropolitan Exchange Clubs in cooperation with the Detroit Dept. of Parks and Recreation, city and township schools and the C.A.P., copping nine winning places in indoor and outdoor events. The following *Balsa Bugs* members will be sent to the Victory Nationals with all expenses paid: Ed Stoll, Erwin Green, Clarence Feucht, Bob Bienestein, Burton Jones, Fred Wilhelm, Warren Jones, George Xeuakis and Carl Brewer.

The Detroit club now holds its business meetings on the first and third Wednesdays of each month, devoting its Tuesday gatherings to indoor flying. Recent elections produced the following results: Bud Kagel, Pres.; Leonard Marzewski, Vice Pres.; Ray Brosowki, Secy.-Treas.; Howard Schlack, Sgt.-at-arms.

Nebraska

Jerry Ryan informs us that his club, the *Lincoln Model Aircraft Engineers*, is once again renewing model activity after a wartime halt.

New Jersey

15,000 spectators thrilled to the spectacle of the nine-hour Eastern States Model Airplane Championships held in Elizabeth on June 16 and sponsored by Levy Bros. Department Store. The Warinanco Park stadium was the scene of a highly successful meet which featured stunting, racing and exhibition events to the constant amazement and gratification of New Jerseyites who in this area were more or less uninitiated to the model flying pastime. Highlighting the program was the father-son entry of Ernest Babcock Sr. and Ernest Babcock, Jr. of Morris Plains, a Class C ship which set a new official record, attaining a speed of 113 miles an hour in a four-minute flight. Among the celebrities attending was Rochester, of radio fame, who is an ardent control line enthusiast and who had one of his models at the meet.

A JUNE 9 MEET, sponsored by *South Jersey Gas Model Airplane Assn.* and sanctioned by AMA, was held at the Echelon Flying Field, Ashland. Here are the results:

Highest points (175)—Herb Souder.
Highest single flight time (7 min. 11 sec.)—Irv Rudley.
Class A—1. Leon Shulman. 2. Wm. Smith, Jr. 3. Herb Souder.
Class B—1. Herb Souder. 2. Irv Rudley. 3. F. Kroll.
Class C—1. Stu Warnock. 2. Pasquale Cianbrello. 3. Leon Shulman.

New York

The *Prop Spinners* of Hicksville, L.I., staged their 7th Annual Northeastern Championships on Aug. 4 with a $400 prize array and a program of seven events lined up for contestants to include Classes A, B & C free flight gas, towline and hand launched gliders, fuselage and stick rubber models.

THE *Williamsburg Model Craftsmen's* answer to the hundreds of disappointed

East Coast modelers who will not be able to get in the race at the Nationals in Wichita is an announcement of their East Coast Championship Meet. AMA sent along its sanction in June and *Model Craftsmen* sponsor-members have set the date for Sept. 1, rain date Sept. 8, at Hicksville, L.I., for free flight gas only. Trophies and engines will go to the winners; those placing in events will be on the receiving end for medals, kits, supplies, etc. Only AMA members may enter and records made on this date will be official. Contact Bernard Furgang, 1497 Carroll St., Brooklyn 13, for full information. The Brooklyn club sincerely hopes that this contest will more than make up to all the boys of the area who cannot attend the 1946 Nationals in the West.

TRI-CITIES AIRPORT, Endicott, was the setting for an AMA-sanctioned model plane meet on June 23, sponsored by Binghamton Exchange Club, Boys' Club division. Events run off were: gas A, B & C, rubber stick and fuselage, towline and handlaunched gliders. $150, merchandise and trophies were turned over to winners.

FORMALLY ENTITLED the *Buffalo Miniature Aircraft Engineers* but more easily identified as the *Flying Bisons*, this western New York model club was organized last March under the leadership of a small group of experienced model builders to further all phases of model aviation, especially control line flying. George King holds the president's chair, Harold DeBolt has been appointed contest director—the club now consists of 45 senior and 20 junior members under 21 years of age. Contest activity is running under full schedule. The *Bisons* placed among the winners in Hartford, Schenectady and Buffalo meets and ran off a control line event of their own on July 21.

Ohio

The *Cleveland Balsa Butchers* accepted a challenge offered them by the *Pharos Model Flying Club*, Hillingden, Middlesex, England, to participate in a decentralized model contest on July 14. It is the first event of its kind held between two countries and will perhaps soon become part of a new trend in between-countries model competition. Results are eagerly awaited by "Club News."

THE *AERL-eers* at the Cleveland laboratory of the National Advisory Committee for Aeronautics were reorganized last October by Chester Lanzo; Bob Reich was elected Pres., George Reich, Vice Pres., Bill Gowan, Treas., and Roberta Schalamon, Secy. A Sept. 15 open contest held by the *AERL-eers* will feature Class A, B & C freeflight, hand launched glider, and stick and fuselage rubber events. Interested modelers may contact Miss Schalamon at : *AERL-eers Model Plane Club*, National Advisory Committee for Aeronautics, Cleveland Airport, Cleveland.

ROBERT J. DAVIS writes us that an application card for membership in the *Ravine Park Village Model Club* in East Toledo is a trainer type model built by a prospective member—the modeler must then put in five hours' flying time with his ship before graduating to heavier and faster speed types. After an additional five hours on these speed jobs, the builder is then allowed to construct any type model he chooses.

Enthusiasm is plentiful, funds are not; gas motors are mostly out of the question so the fellows have restricted their building to fishpole-powered models. Meets in which this type of ship is entered are

(*Turn to page* 74)

WHAT GOES IN HERE

Pays Off Up Here

BANTAM IS ENGINEERED FOR CHAMPIONS

$18.50
Less Coil and Condenser

Want proof? A Bantam powered control line job, burning the course at 92 m.p.h., took first place at the recent Yankee Championship meet at Hartford, Conn. (Another Bantam took second). *First* at the gas meet at Valhalla, N. Y.! *First* at the South Jersey gas meet! *First* at the Elizabeth, N. J. meet! Yes—the Bantam combination of precision design, finest materials and controlled manufacture pay off up there . . . where it counts. Power your plane with a Bantam and get the winning habit!

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FLYING FROM WATER

MODEL builders fortunate enough to be situated where seaplane flying is possible will find in our October issue plans for a beautiful twin-float free flight Class A gassie that was designed to look and act like a big plane, and which will prove an ideal sport flier.

judged on the following flying details:

1. Speed (30 ft. line) timed to number of circles per min.
2. Workmanship and detail.
3. Landing and takeoff.
4. Stunts.

Tennessee

Complete results of the Tennessee Model Airplane Meet held on May 25-26 at Cornelia Fort Airpark in Nashville have been forwarded to us by the contest's sponsor, the Nashville *Banner*.

James Robinson of Nashville, grand prize winner, received the coveted Governor's Trophy and an all-expenses-paid trip to the 1946 Victory Nationals. Here's the lineup of other winners and their follow-ups in the various events:

Free Flight Gas: Class A—1. Bob Sergeant. 2. B. J. Long. 3. James Robinson.
Class B—1. W. H. Hamby. 2. Vernon C. Ham. 3. J. T. Buck.
Class C—Glenn Herd. 2. J. B. Snook. 3. Bob Sergeant.
Control Line Gas—1. L. A. Pfeiffer. 2. Gerald P. Brannon, Jr. 3. William Shirley.
Control Line Stunt—1. James Jennings. 2. Bob Garrett. 3. Bob Henry.
Towline Glider—1. Don McLure. 2. E. S. Dooley. 3. Thorpe Calloway.
Hand Launched Glider—1. Henry M. Akin. 2. Jack Cantrell. 3. R. J. Pyle.
Rubber Powered Cabin—1. Roland Anderson. 2. John Dooley. 3. William Shaw.
Rubber Powered Stick—1. John Dooley. 2. Clyde Curry. 3. William H. Shaw.
Flying Scale—1. E. S. Dooley.
Scale (appearance)—1. L. H. Keeley. 2. L. A. Pfeiffer. 3. A. R. Perdue.
Worst Crackup—1. L. I. Mayfield. 2. Leland Kimbro, Jr. 3. Beverly Gooch.

Washington

The *Walla Walla Gas Bugs*, active Washington club, held its 4th Annual Gas Model Contest in May with the following results:

Longest flight (7 min. 6 3/10 sec.)—Lyle Christopherson.
Class A—1. L. W. Johnson. 2. Robert Kern. 3. Edward Murphy.
Class B——1. Joe Fox. 2. Morris Swedlund. 3. Kathe.
Class C—1. Lyle Christopherson. 2. Jack Berry. 3. Leo Miller.
Speed Control Line—1. Orvin Brown. 2. Harold Palmer. 3. Francis Reynolds.

Of great interest to the 1500 spectators was a radio control flight demonstration by Jim Walker of Portland, originator of U-control. The *Gas Bugs* number 35 members, hold meetings each Monday at the Y.M.C.A. and have a 2000 acre flying field, the local airbase, at their disposal each Sunday afternoon. The following officers direct club activities: Norman McLeod, Pres.; E. M. Swedlund, Vice Pres.; Robert Rook, Secy.-Treas.; Edward Murphy and Harold Svenson, Advisors.

Olympia Miniature Aircraft Club vs. the *Tacoma Aeromudlers*, a free flight gas model contest on May 15, showed these results:

Open—1. W. R. Scott. 2. M. S. Stevens. 3. J. Dimmer.
Cross-country—1. M. S. Stevens. 2. R. Thomas. 3. W. R. Scott.

Canada

The *Model Aircraft League* of Montreal, recently reorganized after a lapse of activities during the war, is seeking members. All modelers interested in joining are asked to write to H. Freeman, 5830 Park Ave., Montreal 8, Quebec.

England

Graham D. Barnes, secretary of the *Sale Aero Club*, writes us of his group's interest in lightweight and heavyweight gliders, gas and rubber-powered models (Wakefield, lightweights and scale), and asks an American organization with similar interests to contact them for purposes of exchanging news, photos, ideas, etc. Mr. Barnes may be reached at 61 Clough Ave., Woodheys, Sale, Chesire.

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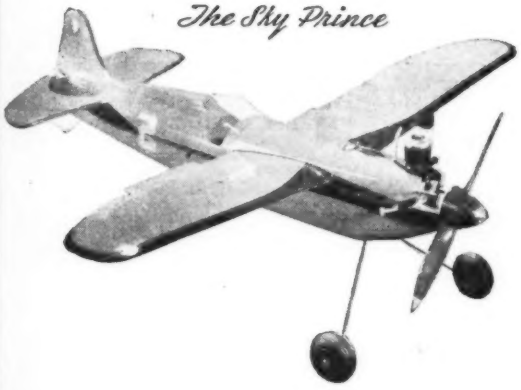

The Sky Prince

The Sky Queen

THE SKY PRINCE

Class B or C

Balsa airfoil wings . . . Redi-bent landing gear, quickly demountable Power unit; every part carefully selected . . . and prepared material.

$5.50

Kit, less motor

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This beautiful semi-scale model of the Voyager 105 is a slick performer with pre-formed airfoil, Solid Balsa Wings and features demountable Power unit.

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Complete KIT $8.95
(less motor)
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2 new Rubber Band MODELS - 75¢

Die-stamped wing ribs, Formed prop shaft

WESTWIND
Contest Model 24"

COMBAT
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BOTH HAVE WON IN EVERY CONTEST ENTERED

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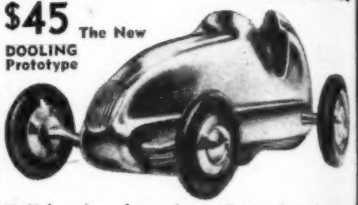

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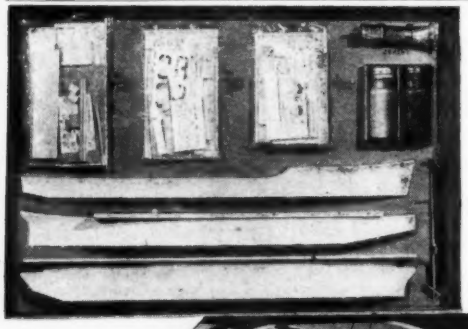

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Guaranteed *Patent Pend.*

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A Firm of Reputable Engineers
1500 BANGS AVE. ASBURY PARK, N. J.

Radio Control Relay

(Continued from page 34)

The price for either an 8000 or 10000 ohm coil complete with core, end piece and armature is one dollar. Needless to say, it is well worth the cost.

The metal parts are cut down from the original pieces to conform to the new model. The drawings are self-explanatory, and by following the text a very suitable relay and receiver can be made. The drawings are exact and full size except where noted.

Before starting construction on this relay you'll want to know about tools and materials required. In addition to the usual outlay of vise, hammer, drills, etc., a small jeweler's saw, several small files and a 1-72 machine screw tap will be needed. If the builder purchases a ready made bobbin coil and parts he will then only need a few scraps of brass, wire and aluminum. If a ready made bobbin is not purchased he must wind his own and cut the core, end pieces and armature from solecore iron or transformer laminations.

To start construction, first mark the ends of the bobbin (1) as shown in the drawing. The slots are 1/32" deep and are on top and side of the coil form. These slots are for the placement of parts (2) and (6). Care must be taken when filing these slots in the plastic so that the wire under the insulation is not damaged. The two wires come out from the bottom. Next cut the armature bracket, part (2), from .033 aluminum and bend to shape. Tabs W are bent so as to fit the curve of the windings. Tab Z is not bent to a complete right angle until after the armature is put in place. This piece (2) is next cemented in place with the end tabs fitting firmly in the top cuts.

In remaking the core (3) and end piece (4) it is necessary first to separate them. This is in order effectively to lengthen the core piece so that another end piece can be riveted to the other end. It can be removed by filing away part of the crimping and knocking the core out of the end piece with a hammer. The plain end of the core piece is then filed at the corners to produce a shoulder similar to the end from which the end piece was removed. Do not cut this shoulder deeper than 1/16". This is the end that will later be fastened back on the end piece which was just removed.

The end piece (4) is now heated and bent straight. Take care that the slot for the core piece is not pushed out of shape. Rebend to shape as shown in the drawing, being careful to keep the proper dimension between top of the slot and bottom of the bend. Drill and tap for a 1-72 machine screw as shown, then make cut with a jeweler's saw. This slot allows the piece to be squeezed together, thus making a tight fit for the machine screw (4a). The other end piece (5) is cut from .030 solecore or similar iron. The bend on this piece fits over and rests on the top of the armature bracket (2). Complete the assembly of 5, 5a, 5b, 5c, 5d and 5e using two 1/16" aluminum rivets about 3/16" long. Countersink the inside of the holes in (5) so there will be a smooth fit against the end of the coil. Use a thin coating of cement on the rivets and on the inside of the holes in piece (5b) as a means of insulation. In assembling these pieces make sure the rivets are in the center of the holes in piece (5b), otherwise a short circuit may occur. This assembly is not riveted to the core piece until the armature is in place.

The armature spring holder (6) is cut

and bent as shown, from .033 aluminum. Drill the 1/8" hole after bending and cut slot with a jeweler's saw after the hole is drilled. Cement this piece in place in the side slots of (1), making sure it is at right angles to the armature bracket. The armature spring (6a) is bent from .010 music wire as shown. The tension spring screw (6b) is made from a short length of 1/8" brass tubing with a washer soldered in place as shown. Take care not to get solder on the inside of the washer (long end of the tubing). A slot is cut in the short end for screwdriver adjustment. A small slot is cut in the long end in which one end of the armature spring is fastened. If you are lucky enough to get hold of a small phosphor bronze hair spring, such as is used on commercial relays, it should be used instead of the music wire type. The photographs show this bronze type spring.

The armature (7) is cut down to size as shown. Cut out the center of the wide end so as to balance the armature at the pivot point. A silver contact is riveted or soldered in the position shown. This contact is 1/8" diameter and about 1/32" thick and may be cut from a dime if no regular silver contact is available.

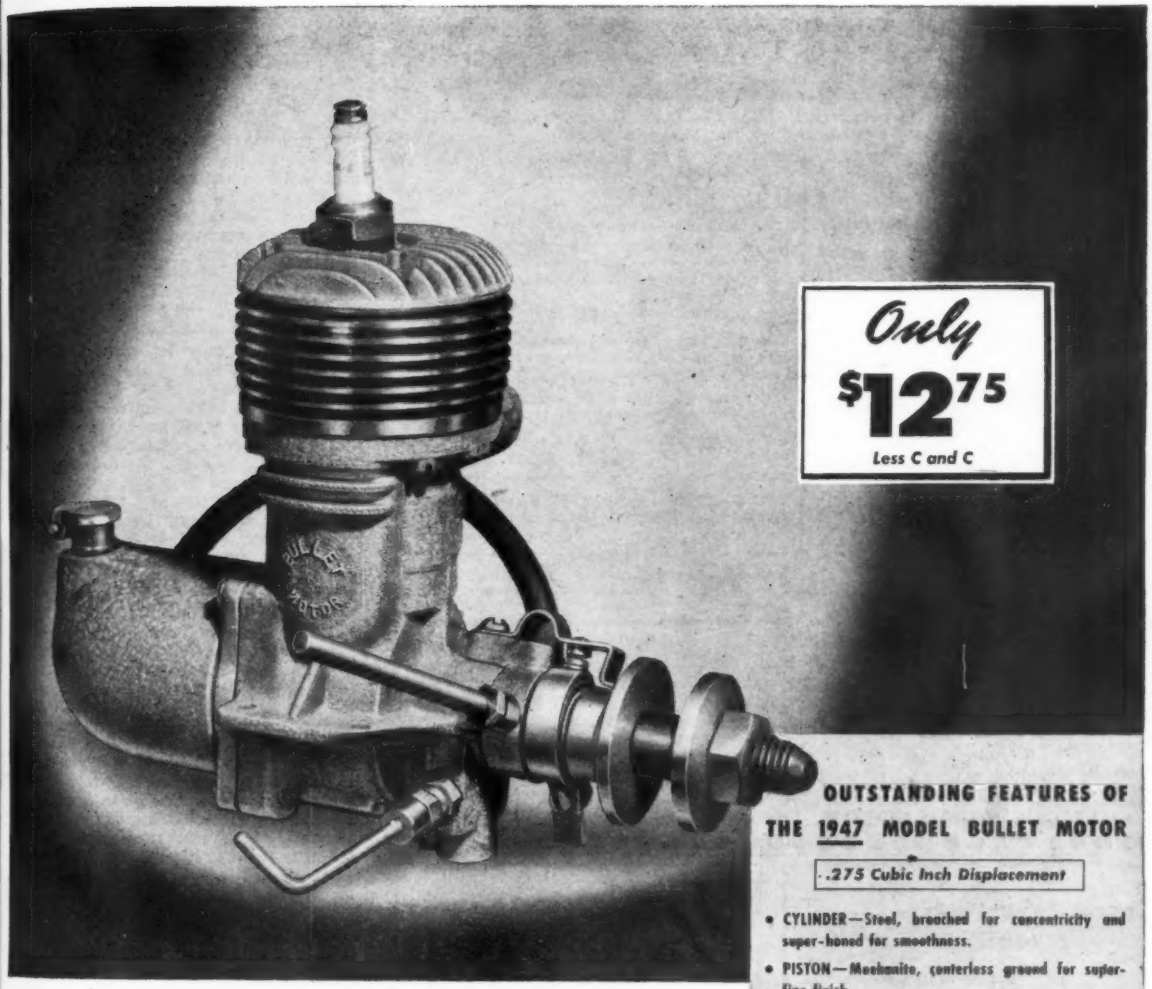
If the coil and parts are purchased there is no need to change the armature pivot (8) in any way, except for two small cuts as shown. In order to keep the pivot in place between the armature brackets, two light saw cuts are made with a jeweler's saw on opposite sides of the pivot on the inside of the bracket. The shoulder one one end of the pivot will keep it from sliding out of the one mounting bracket and a small .010 music wire catch (8a) will prevent it sliding out the other way.

The adjusting screws (4a) and (5a) are cut from a 1-72 brass machine screw; (4a) is 1/8" long, slightly rounded on one end and has a small screwdriver slot in the other end; (5a) is 5/32" long and has a tip of silver soldered to one end as a contact point.

Now for the final assembly and adjustment. Pieces (2) and (6) have already been cemented on the bobbin. Insert the armature in place in the armature brackets, after the pivot has been soldered in place as shown. After inserting, bend tab Z up to a right angle. Note that the armature bracket and the armature spring holder are slightly off center. When inserting the armature, the wide end goes toward the long end of the bracket. The protruding end of the pivot may be used for attaching an arm for an additional contact point. The tension spring screw is inserted in the bracket (6) with the washer on the outside. The spring (6a) is soldered in place as shown. The upper half of the hole is squeezed together in order to get a tight friction fit. Rivet the original end piece to the core as previously described. Insert this in the coil with the bend going over the wide end of the armature.

The other end assembly is then put in place, with the small end of the armature going between the iron piece and the aluminum screw holder. Rivet this in place, taking care not to spring any of the parts out of shape. The 1/8" long machine screw (4a) is inserted in the iron core end and the 5/32" long silver tipped screw is inserted in the aluminum piece. Adjust the tension spring screw so that the contact end of the armature is pushed upward. Next, adjust the screw contact point so as to force the armature down. Allow about .015" between the

(Turn to page 80)



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.275 Cubic Inch Displacement

- CYLINDER—Steel, broached for concentricity and super-honed for smoothness.
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- CRANKSHAFT—One piece steel, heat-treated and centerless ground. Square shaft porting.
- CONNECTING RODS—Die-cast Aluminum alloy with naval bronze bearing insert.
- WRIST PIN—Naval bronze.
- CRANKCASE—Die-cast Aluminum alloy with naval bronze crankshaft bearing insert.
- CYLINDER HEAD—Die-cast Aluminum alloy with angular set spark plug hole.
- MOVABLE TIMER SPRING—Beryllium copper, heat-treated for better spring tension.
- CONTACT POINTS—Large tungsten point for positive contact.
- TIMING CAM—Hardened steel.
- NEEDLE VALVE—Fine threaded steel, smooth taper for accurate metering of fuel.
- GAS TANK—Attached by center screw to permit mounting motor in any position. Spring snap cap for quick filling.
- WEIGHT—4 ¾ Ounces. (Bare weight).
- SPARK PLUG—Champion VR-2.
- FINISH—Motors are finished with baked crinkled black plastic. Brass and bronze external parts nickel plated.

NOW AT YOUR DEALER!

armature and the top of the end piece on the assembly and the bottom of the wide end piece. The armature itself may have to be bent slightly in order to accomplish this.

Experimenting with the adjustments of this relay will give the desired results. It will work on a current change of as little as .25 milliamperes. Do not use too great a current load through the contact points. If a large current load is anticipated, larger contact points should be installed. A small piece of plastic is cemented to each end of the bobbin, as shown in the photographs and the perspective drawing, as a means of mounting the relay.

Now your relay is finished, ready to install on the base of the receiver. The base of the pre-tuned 144-148 mc receiver is made from 3/64" Mycarta or bakelite. Cut this to size as shown and drill all holes with a No. 51 drill. Mark tube connections as shown for the filaments, plate and grid. Strips X and Y are cut from a piece of thin brass and laid aside until assembly is started. From a miniature tube socket, such as used for Hytron miniature tubes, remove three of the prong connectors; then cut and bend as shown. Next, rivet 1/16" eyelets or "ship portholes" in the holes indicated, inserting them from the top side of the base. Place strips X and Y and the prong connectors over their respective eyelets before these eyelets are riveted down. The leads of an RK-61 tube are next inserted in their proper holes and all except the grid connections are soldered. Bend the two filament leads over and insert them in the proper holes and solder. Trim off the excess wire on the plate and filament leads after all soldering has been done. Leave the grid lead unsoldered and extending about 1/16" out of the eyelet.

No support for the RK-61 tube is used other than the leads being soldered in position. This tube is light enough and the leads are parallel with the longitudinal axis of the plane so that there is little need for any other type of socket or support. (The next issue will carry plans for completing this receiver and for building a transmitter.)

Remember, this is a very lightweight and compact radio control unit designed primarily for Class A models. A neat job on it will repay you with many hours of flying a pocket sized radio controlled model.

Plane on the Cover

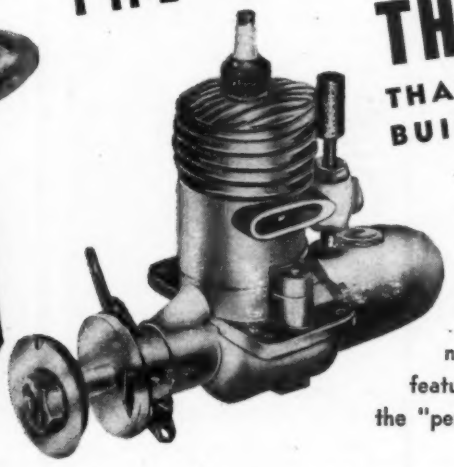
(*Continued from page 23*)

of the central portion which is rounded in at the top to provide for the single cockpit. The tail surfaces are actually fabricated on *Silvaire* jigs but are cut off to provide a reduction in area. The wing ribs are standard *Silvaire* parts as are the ailerons and control cable fittings. However, the spars are new to take the loads formally acommodated by the wing struts. The landing gear is fundamentally a *Silvaire* assembly but entirely different in installation, being independently sprung and supported.

The job of designing and building the Model 10 was accomplished in less than six months. It is the work of Mischa Kantor, Luscombe engineer, who supervised the entire project from start to finish. He worked with the avowed intention of creating the fastest single seat lightplane in the 65 hp class and carefully supervised the design of a bubble canopy for the cockpit, generous wing

(*Turn to page 83*)

THE MIGHTY, NEW THOR "B" THAT YOU HELPED BUILD IS HERE.



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Yes—thousands of you modelers helped us build this wonderful new THOR "B." And now, here it is, with these unusual features which you said you wanted in the "perfect" model engine:

- Presto Starting Device
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"I also want you to know I am very pleased with the Thor engine I recently ordered from you. I'm amazed by the compression that is found in a motor as inexpensive as yours."
R. W., Ann Arbor, Mich.

"I received my Thor engine and am very much pleased with it."
F. G., Clinton, Okla.

"I have really enjoyed my Thor since I have had it."
E. W., Orlando, Fla.

"Have received my Thor engine and am well pleased with it."
E. C., Norfolk, Va.

"I am really surprised and pleased with my Thor engine. It is really of fine workmanship and materials."
D. J., Sanford, Fla.

"A friend of mine received a motor from you the other day and it runs perfect. Please send me one right away."
E. C., Vestal, N.Y.

"I like the engine very well and it runs good."
S. S., Nashville, Tenn.

"I have gotten very satisfactory performance from your Thor."
G. B., San Rafael, Calif.

"I like the even and steady way it runs much better than several other motors I have owned. It also seems to have plenty of snap for its size."
E. L., Warm Springs, Mont.

"We are in receipt of the two Thor engines we ordered from you recently and are very well pleased with this motor and are enclosing our check for 4 more of these engines."
S. S., Pampa, Texas.

"I am a pleased and satisfied owner of one of your Thor gas-line engines."
S. W., Rutledge, Pa.

"After seeing one of the Thor engines run which was owned by one of my buddies, I reached a conclusion that it was a superior engine for the listed price."
W. F., Del. Co., Pa.

"I am a proud owner of your Thor engine and it runs with clock-work precision."
A. L., Long Beach, N.Y.

"The first ½ dozen were great so now ship me with haste 4 dozen more."
H. H., Omaha, Nebr.

"I am very pleased with my Thor engine."
R. R., Middlesboro, Ky.

"I am very pleased with your engine and hope to have it in a contest in the near future."
A. L., Long Beach, N.Y.

"Have had this engine for about one week now and am having excellent results with it."
O. W., Gulfport, Miss.

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SPECIFICATIONS

H.P.: 1/6	Displacement: .29
Bore: 13/16	R.P.M.: 300-11,000
Stroke: 9/16	Weight: 4½ oz.

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fillets and large fairings over the landing gear struts.

The Model 10 has a wingspan of 25 ft. and is 17 ft. long. The structure is all metal throughout with the exception of the fabric covering of the wing panels. Its construction follows the metal die cutting practice pioneered a decade ago by Don A. Luscombe, founder of the company bearing his name, and one of the patriarchs of American lightplane design.

Luscombe's prominence in lightplane activities began in May 1929 when he formed the Mono-aircraft Corp., in Moline, Ill. His Chief Engineer was Mr. Clayton Folkerts, who was destined to achieve fame many years later in his own name as designer of a series of racing airplanes for the National Air Races. Luscombe produced the well remembered *Monocoupe*, 65 hp two place cabin monoplane; the *Monoprep*, 65 hp two place model with a parasol wing and open cockpits; the *Monosport*, 110 hp two place monoplane; and the *Monocoach*, 225 hp four place cabin transport model.

Although highly successful airplanes, production quantities were not enough to carry the company through the early thirties financial slump and Mono-aircraft was sold to Knight K. Culver. The story of what Culver made of the firm, which was later changed to his name, was told in MODEL AIRPLANE NEWS March 1946. This month we take another turn from this path and follow the story of Don Luscombe. With the era of welded-steel tubing fabric covered fast drawing to a close, Luscombe began experiments with metal die cutting and stamping, a far cheaper and less complex method of metal fabrication than the use of metal skin strips riveted onto frames and stringers. In addition, he designed a high wing monoplane of extremely advanced lines and test flew it successfully. He called the new plane the *Phantom* and sold several of his friends on the idea of its manufacture.

The Luscombe Aircraft Corp. was formed and facilities prepared in Trenton, N. J. for the manufacture of the new *Phantom*, which quickly proved one of the fastest, safest and most popular lightplanes ever offered to the public. The 45 hp model was augmented by the Luscombe *Fifty*, powered by a 50 hp Continental, and the Luscombe *Ninety*, powered by a 90 hp Warner engine. During 1938-1941 more than 300 of these trim, two place lightplanes were sold. Then came the new model 8 *Silvaire*, one of the most popular lightplanes available prior to the war. But Pearl Harbor brought its production to a swift halt. Luscombe, seeing the writing on the wall, evinced an interest in the sale of his holdings in the company.

Then occurred one of the strangest chain of events in modern aircraft manufacturing history. Luscombe sold his interest, 64.3% of the Luscombe stock, to young Leopold H. P. Klotz, whose American Aviation Investing Co. assumed title to this controlling interest. Klotz proved youthful, ambitious and hard-working and soon had plans underway for conversion of the Luscombe plant to war sub-contracting work. Jigs and fixtures for the fabrication of ammunition boxes, hydraulic actuating units and large fuel tanks for the Curtiss C-46 *Commando* were soon in full production. These projects were followed shortly by contracts for the manufacture of rudders and elevators for the Grumman *Wildcat* and bomb bay doors for the *Avenger*.

These latter contracts with the Navy brought forth the usual investigation which was suddenly brought up sharp by the fact that Klotz was a citizen of an alien country unfriendly to the U. S. Proceedings were instituted promptly on April 7, 1942, his holdings were vested in the Alien Property Custodian division of the U. S. Treasury Department.

Since these holdings constituted a majority control of the company, Luscombe became literally a goevrnment-operated plant. However, the change in management left the work of the company unaffetced and the contracts for Navy sub-assemblies continued with an extremely satisfatcory production record. The Navy actually had plans for an extensive enlargement of the Trenton plant well under way when aircraft production cutbacks brought a swift alteration in the plans for expansion.

Klotz, meanwhile, applied for citizenship papers and filed an appeal in which he hoped to show that his native country, Austria, was not an enemy country and that he had been forced to leave Vienna where his family had been wealthy industrialists. Finally, the Vested Claims Committee determined that Klontz was a resident neutral rather than an enemy alien, and his holdings in Luscombe were returned to him on June 6, 1944.

Following V-J Day, Klotz toured the country seeking a suitable site for a brand new plant in which to manufacture the *Silvaire* and which might sever all old ties. He purchased land near Dallas, Texas, and built a new plant in record breaking time. Last January he secured the services of Eugene W. Norris, Technical Services Manager of Aircraft Industries Association, as Chief Engineer.

Klotz' sincerity, energy and production "know how" have paid big dividends and his Dallas plant is now producing six *Silvaires* a day, which is claimed to be the largest lightplane production west of the Mississippi. But he has highest hopes for the new Luscombe Model 10 and places his bets on its high performance, which he feels is the first requirement of the postwar lightplane. The little single seater has a top speed of 135 mph and cruises at 122 mph on its 65 hp engine, which may justify his unique title for it.

It weighs only 845 lbs. and burns but four gallons of fuel per hour; this means about 30 1/2 miles per gallon, which is stiff competition for even the highly touted "economy" automobiles now available. Klotz points out that untold thousands of dollars are wasted each year by two place airplanes being flown every day only by the pilot with the passenger seat empty. Not only is this true on business trips but it is also true in the plane "time" selling business in which hundreds of pilots fly simply to "log time" and prefer doing it alone. On this premise, the Model 10 can mean extra miles per hour and extra miles per gallon to the private pilot who takes his flying "neat".

Klotz cannot yet announce dates concerning the Model 10 simply because he hasn't set them yet. The plane, only one of which has been built to date, is undergoing extensive flight tests and its design is being engineered to incorporate many essential changes that have been created since it first left the ground. But the flood of inquiries from former fighter pilots and private pilots who are looking for the answer to their single place problems seem to indicate that they have found it in the Luscombe Model 10, a name that has come a long way on a plane that will go a long way.

Model Luscombe 10

(*Continued from page* 17)

structure slightly to provide for the motor a fine control line model can be had. As usual we caution you to work carefully with the best materials because the finished product can be no better than the effort and raw materials put into it. Medium weight balsa is used throughout for the rubber model while a gas job should be fabricated with harder grade, particularly for spars and such. Regular colorless, quick-drying cement is used to assemble the various parts.

Since they are most simple, let's start with the tail surfaces. Join the drawings of the rudder and make a complete drawing of the stabilizer so assembly can be accomplished right over them. Incidentally, notice that the stabilizer is made in one piece; also that both units are of identical rib construction. Cut the outlines from 1/16" thick balsa and make the spars and ribs from 1/16" sq. strips. When these structures are built, remove them from their jigs and cement strips of soft 1/16" sq. to either side of each rib only. Then cut these overlaying strips to the streamline rib shape. This type of construction is the lightest and strongest we know for small models.

To start wing construction, make a right wing plan by tracing the left plan with carbon paper reversed. Cut ribs, spars and leading edges from materials specified. Assemble the parts over the plans, building the wing into two halves and leaving rib No. 1 off until the halves are assembled. Join the halves with 1 5/16" dihedral at each tip and then install rib No. 1. Trim and sand the edges and tips to their proper shapes to complete the structure.

Since the landing gear is part of the wing unit, it should be made now. Bend the .040 music wire as shown to form a right and left strut. Bind and sew these right to the wing as illustrated, then cement the area for added strength. Wheels are made from laminations of sheet balsa and they should have bearings to permit them to revolve freely. Wheel pants and fairing struts are likewise laminations of sheet balsa. Note that centers of the pants are cut out for the wheels while centers of the struts are open to allow the wire struts to spring and thus absorb shock. Incidentally, don't attach these landing gear details until the wing has been covered.

For years we have been modelling monocoque fuselages in the manner described here. This method calls for the use of four sheet balsa keels to give the proper outline shape, bulkheads to form the crossection, and fairing stringers; it is both easy to accomplish and strong so we recommend it highly. Go about the construction in this manner: Trace top and bottom outlines of the side view as well as sides of the top view to get the shapes of the keels which are cut from 1/16" sheet. Bulkheads are likewise 1/16" sheet and two of each are needed as they are made in halves. To assemble, pin top and bottom keels over the side view; note how the top keel at the rear forms the mount for the stabilizer and how the bottom keel below the cockpit is curved to fit the top chamber of the wing rib. By making these very accurately, assembly of the parts is made easy and exact.

Over the side view, place half of the bulkheads in their respective positions.

(*Turn to page* 88)

then slip a side keel into the notches. Now pick this frame up and add the remaining formers and keel. Stringers of 1/16" sq. stock are next attached to place. Add those closest to the side keels first, placing one on each side at the same time to avoid pulling the structure out of line. Incidentally, it will be necessary to cut some of the notches in the bulkheads as assembly progresses. We do this to assure perfectly straight stringers and it makes the task no more difficult if a razor blade broken to a sharp point is used. On the lower fuselage between bulkheads B and C curved pieces of 3/32" sheet are attached to fit to the wings' uppercamber. Just aft of bulkhead F small inserts of 3/32" sheet are installed at each side to retain the bamboo pin that holds the rubber motor. The nose section may be made entirely from laminations of cross grained sheet or it may be made from a block—or several small blocks glued together to make a large one—with the 1/2" thick laminated front shown. Check the drawings for details and note how the whole nose is hollowed for lightness. In the extreme front laminated portion of the nose, a square hole is cut to receive the removable nose plug which is shown. Carve the outside of the nose to shape, using pictures of the model and real craft as a guide.

Two propellers are shown; the scale one which we made from thin laminations of white pine and mahogany and the enlarged flying one for real performance on the flying field. Carving a good flying prop is of such importance that much care must be exercised. First cut the blank which is a hard balsa block to the size and shape given. Drill the tiny hole for the propeller shaft and then begin to carve. A right revolving prop is required and it is best to finish the back face of the blades first. Cut and sand about 1/16" undercamber into the back, then cut away the front until the blades are of the required thickness. Round the blades and sand them into balance.

The nose plug is simply squares of 1/8" thick balsa glued together with a 1/32" thick plywood face. Cement washers or bearings to the plug to fix the line of thrust.

To assemble the propeller unit first bend a shaft from .040" music wire. Slip the nose plug, several washers and the propeller on in that order. Bend the end of the shaft into a U and pull it back into the prop, or better still fit the propeller with a free wheel gadget and bend the end of the shaft accordingly.

With all the parts constructed they may now be prepared for covering. Carefully sand them so that as near perfect a job as possible can be done. Colored tissue is recommended because of its light weight and attractiveness; it is stuck to the frames by banana oil or very thin dope. For the tail surfaces and bottoms of the wings, use a separate piece for each flat surface, and for the tops of the wings use an additional section for the tips since they are tapered slightly. The fuselage will require numerous small pieces neatly lapped to avoid wrinkles. To tighten the tissue lightly spray it with water and allow to dry; however do not dope the tissue until the whole model is assembled.

The little model will begin to resemble the real ship now that parts are ready for assembly. Slip the wing into place and cement it fast. Make the two small fillets from 1/32" sheet balsa and attach them with glue. Now fit in any small pieces of 1/16" sq. needed to shape the bottom of

(*Turn to page* 90)

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the fuselage and cover the area. Slip the stabilizer into place and cement. The rudder is placed perpendicular to the stabilizer with the front offset a bit for a right turn; check the alignment of all surfaces carefully. Finish any small fillets between tail and fuselage and the covering can then be sprayed again to be sure all wrinkles are eliminated. Now brush one or two coats of light dope on the covering.

It is the minor details that "make" any model so they should not be overlooked. Probably the first part that will catch the eye of anyone viewing the model Luscombe will be the bubble canopy. The one on the original was easily made by simply heating a piece of 1/32" soft plastic in an oven and then stretching it down over a carved wood mold. Two persons (or any reader with four hands can do it himself) are needed for this job, and if at first it is not perfect simply reheat and try again. Incidentally, if strain marks appear on the canopy they can easily be eliminated by rubbing with auto rubbing compound or Simoniz cleaner. Landing gear fairings, wheels and the like may be installed at this time. Details such as license numbers, control outlines, stripes, cowl grill, cockpit details, etc. are all represented very effectively by tissue of contrasting color doped to the covering. Tail wheel, exhaust stacks and the like are made from scraps of wood. Sticklers for details can find more on photos of the real ship and they may dress up their ships to the limit of their initiative and ability.

Power required for each model will vary with the weight and general efficiency; however six or eight strands of 1/8" flat brown rubber will be about right. Lubricate the strands with a mixture of tincture of green soap and glycerine before dropping them within the fuselage. To do this hook one end of the loop of strands to the prop shaft and then tie the others together with a bit of thread and drop them through the nose. A removable bamboo pin is slipped through the back to retain them.

Little remains now but enjoyment of the fruits of the hours of labor. However, remember that to get the most of this or any model it must be handled carefully and skillfully. With this in mind select a nice grassy field and a calm day for the test flights. First tests should be glides from shoulder height. If a stall occurs, add a small amount of weight within the nose; should it dive, add weight to the tail. Once glides are okay, try a small amount of power. Observe the flights carefully, adjusting the amount of turn by putting slivers of balsa between the nose plug and nose to offset the thrust line right or left and at the top to tilt it down should the model stall while under power. As flights become more satisfactory, increase the amount of power making any further minor readjustments required. The author found that his scale models are most satisfactory when they are adjusted to fly in a large left circle when under power, and then when they start to glide the turn is large and to the right.

The Luscombe 10 is a smart little ship, trim in line and fleet when on the wing; you are sure to find that yours will take to the air as readily as a duck takes to water.

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1/32", 1/16", 3/32", 1/8", 6" x 12"	.10
1/4", 6" x 6"	.10
6" x 12"	.20

	1 oz.	2 oz.	4 oz.	½ pt.
Clear Dope	.10	.15	.25	.35
Clear Cement	.10	.15	.25	.40
Dope Thinner	.10	.15	.20	.30
Wood Filler	.10	.15	.25	.45
Banana Oil	.10	.15	.25	.35
Colored Dope	.10	.15	.25	.45

Include Postage of 5c for each 1 oz., 2oz., 4 oz. bottle; 10c for half pints.

Colored dope available in following colors: **Red, White, Yellow, Blue, Light Blue, Black, Green, Orange, Spinach, Brown, Olive Drab, Sand, Silver, Sky Blue, Gray.**

MINIMUM WOOD ORDER $1.00. PACKING CHARGE $.25

Balsa Strips 36" lengths

1/16 x 1/16	.8 for .05
1/16 x 1/8	.8 for .05
1/16 x 3/16	.6 for .05
1/16 x 1/4	.5 for .05
1/16 x 3/8	.4 for .05
1/16 x 1/2	.02
3/32 x 3/32	.6 for .05
3/32 x 3/16	.5 for .05
3/32 x 1/4	.3 for .05
3/32 x 3/8	.02
3/32 x 1/2	.2 for .05
1/8 x 1/8	.6 for .05
1/8 x 3/16	.3 for .05
1/8 x 1/4	.3 for .05
1/8 x 3/8	.3 for .05
1/8 x 1/2	.2 for .05
1/8 x 3/4	.2 for .07
1/8 x 1	.06
3/16 x 3/16	.02
3/16 x 1/4	.02
3/16 x 3/8	.2 for .05
3/16 x 1/2	.03
3/16 x 3/4	.05
3/16 x 1	.07
1/4 x 1/4	.2 for .05
1/4 x 3/8	.04
1/4 x 1/2	.05
1/4 x 3/4	.07
1/4 x 1	.08
5/16 x 5/16	.05
5/16 x 3/8	.06
5/16 x 1/2	.08
5/16 x 5/8	.09
5/16 x 1	.12
3/8 x 3/8	.09
3/8 x 1/2	.10
3/8 x 3/4	.12
1/2 x 1/2	.10
1/2 x 3/4	.12
1/2 x 1	.14
5/8 x 5/8	.15
5/8 x 1	.18

Balsa Sheets 36" Lengths

1/32 x 2	.06
1/16 x 2	.07
3/32 x 2	.08
1/32 x 3	.09
1/16 x 3	.10
3/32 x 3	.12
1/8 x 2	.10
3/16 x 2	.12
1/4 x 2	.14
3/8 x 2	.16
1/8 x 3	.14
3/16 x 3	.16
1/4 x 3	.18
3/8 x 3	.22

Balsa Planks 36" Lengths

1/2 x 2	.18
1/2 x 3	.25
3/4 x 2	.22
3/4 x 3	.30
2 x 2	.50
2 x 3	.65
3 x 3	1.85

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Diesel Sportster

(*Continued from page 25*)

There should be no warps in either half as this spells trouble. Cut out the required ribs and parts that go into the wing. When cementing the parts be sure to cement on both sides of all ribs as this prevents the ribs from going out of line. After the wing is assembled sand the tips so they fair into the trailing edge. Add the gusset to the center span as this is used to assure proper dihedral.

At this point we usually say "put in the ignition." However, in this ship all that need be done is to install the engine mounts and bolt the engine in place. The whole ship can now be covered. When the covering is dry you can dope the ship; be sure to thin out the dope 50% as that eases the job so that it will be a pleasure, and the finish one you will be proud to show.

Flying is done in the same manner as with any other ship. All that is needed is a little care in test gliding till a nice flat glide is secured. Since there are no units (such as coil and batteries) to be moved in the ship to correct the balance, weight will have to be added to the tail in order to offset the weight of the engine. If hard balsa is used it would further this aim.

If you have a Class A engine build this *Sportster* and have a model that will take you out of the rut of pylon ships. From our experience with this design we can safely say that with the Arden, real contest performance may be had. With the Movo Diesel you will have a sweet flying and reliable little sport job that eliminates all ignition worries.

MODELS MAKE CAREERS

By ELISE MANNEL

DO YOU think of model making only in terms of a hobby—a pastime designed to fill leisure hours pleasurably? Yes, building models does cram leisure time with interest. But the record of American youth in World War II, in the air service alone, shows that it does far more: model making, practiced by an alert, eager boy becomes an active force in shaping his career.

Youthful enthusiasts who became airminded while learning to build and fly model planes, responded in droves after Pearl Harbor when the U. S. air forces called for enlistment of aviation cadets. These boys were not only airminded, they were trained in coordinating hand and eye. They knew the discipline of concentration on exacting detail; they had learned endurance in the face of failure or disappointment, and willingness to tackle difficulties that require ingenuity to overcome. As they built models and tested them in competitive flights, they developed the very qualities of initiative, concentration on an objective, and ability to "stand the gaff" that were to spell defeat for the enemy in the air.

As an instance of the ease with which young model makers made the transition into the roles of pilot, navigator and other members of a bombing crew, let's read an excerpt picked at random from *The Third Dimension*, monthly bulletin of the Junior Museum in San Francisco, where boys from 8 to 20 can be found any afternoon building models in the big workroom, or testing them in flight over the adjoining playfield:

"Many oldtimers of the Model Airplane Club, on leave for the holidays, found time during their stay to visit the Junior Museum. Bill King, radio operator on B-29's, plans to build a radio controlled gas model when he is released from service. Jim Morris, pilot on Navy *Helldivers*, has enlisted for another term. Henry Dolezel has been flying B-25's and says brother Frank, nose gunner on B-24's, is still on Okinawa." . . ."Al Thompson, B-17 pilot, is out of service now, and so is Bill Konig, who had a rugged time as paratrooper in Italy." . . ."Charlie Dorsett in officers' training (Navy aircraft) is attending Cal. Tech." . . ."Dick Burkett is a civilian again. He flew B-17's for some time and then was transferred to B-29's and stationed at Saipan." . . ."Most of these fellows plan to go in for model airplane building again and should put up some stiff competition in the open division. We hope to see them out in the big contests in 1946, as many of them hold trophies and ribbons from the various contests they competed

in when they were members of the Model Airplane Club before the war."

These are typical examples of thousands all over the nation—boys whose early training in building plane models, prepared them to fly and man the American planes that were such a vital factor in our drive toward Victory. A recent survey among 1500 youthful model-makers disclosed that 65% are between 14 and 17 years old, that 32% are now taking academic courses in aviation and that almost 75% expect to follow an aviation career. Ninety-three percent of these boys hope to fly their own plane.

With air transportation absorbing an enormously increased number of personnel each year, model making is seen to be a vitally important step in the progress of every boy who is attracted to aviation as a career.

Acknowledgement for this article is made to Stewart P. Elliott, one of the West Coast's active and enthusiastic promoters of the value of model making.

FIRST WOMAN OVER THE ATLANTIC

AMELIA EARHART, American lady-bird and first woman to cross the Atlantic by air, did so as a passenger!

Mrs. Frederick Guest was the American wife of British Squadron Leader F. E. Guest. It was she who sponsored the flight of the Fokker seaplane "Friendship," from America to England, in 1928. The Fokker monoplane, fitted with three Wright "Whirlwind" motors and seaplane floats supplanting the original undercarriage, was not a new machine; it had been purchased from Commander Byrd, U.S.N. who gave generously of his advice concerning preparations for the flight.

Arrangements for the flight were made quietly. There was to be no advance publicity. The pilot chosen was a former United States Navy man, Wilmer Stultz. In addition to being "skipper" he also filled the posts of navigator and radioman. His mechanic on this flight was one Louis Gordon who took over the controls while Stultz was engaged in charting the course and in communication.

Miss Earhart, a former social worker of Boston, was invited to go along, it being Mrs. Guest's thought that the presence of a woman on this flight would focus favorable attention of women upon aviation. Miss Earhart, who had been flying about seven years, was an able pilot and had to her credit some 500 hours flying time.

The "Friendship" took off from Boston for Trepassey in southern Newfoundland after almost a month spent in preparation. There they were forced to wait two weeks for favorable weather conditions. Finally, on Sunday, June 17, 1928, after several trials, the seaplane rose into the air and pointed its nose toward England. It had been necessary to unload a portion of their fuel.

They left with 700 gallons aboard. One engine spluttered in protest at a "ducking" received in takeoff. However, it soon joined the smooth, reassuring drone of its two partners and an hour later, zooming along at an altiude of 3000 feet they left the coast far behind.

Despite raging storms the Fokker came through in fine form. With a favorable tail-wind assisting them they attained a speed of 140 miles per hour. About dawn the following day Stultz found it necessary to climb to 10,000 feet in order to obtain clear vision. Temporarily lost, Stultz overcame the impulse to land alongside the liner "America" which sailed placidly below them as they emerged from a cloud bank. Instead, he turned, went back twelve miles and again picked up the proper course. One hour later they sighted a fishing vessel. Still uncertain of direction they held to their course. In less than an hour they saw the outline

of land, and a few moments later they were down, moored to a buoy in the harbor of Burry Port, South Wales!

News of their arrival soon spread and the townspeople gave them a hearty welcome. In 20 hours 40 minutes the "Friendship" had flown 2100 miles! They had averaged about 100 miles per hour.

The following day the "Friendship" flew on to Southampton, England; and after a short stay the jubilant fliers returned to their homeland.

KINGSFORD-SMITH; POST AND GATTY

CHARLES KINGSFORD-SMITH British Wing Commander, was another birdman who felt the urge to try his wings on a long-distance hop. At 4:30 a.m. on June 24, 1930 the Australian and his crew of three took off from the beach at Portmarnock, Ireland in the "Southern Cross."

Through dense fog and heavy rains they headed into the west with New York as their destination. Because of the prevailing weather they veered slightly off their course and eventually landed at Harbour Grace, Newfoundland. Their time was 30 hours 28 minutes for the over two thousand miles they had flown.

The following day the "Southern Cross" continued on to New York; and still later, after a westward flight over the United States, the plane landed at San Francisco. This marked the completion for Kingsford-Smith of a round-the-world tour of 80,000 miles! He had left San Francisco May 31, 1928 to fly 7000 miles to Brisbane, Australia, and on this leg of the tour he had made landings at Honolulu and the Fiji Islands.

On October 19, 1930 Kingsford-Smith, in the "Southern Cross Jr," left Heston, England to drop in at Port Darwin, Australia nine days, twenty-three and one-half hours later. This bettered by six days a previous record for this flight which had been set by Hinkler in 1928!

Leaving Roosevelt Field, Long Island on June 23, 1931 two daring fliers, one an American and the other an Australian, started out in an attempt to encircle the world. These men, Wiley Post, son of an American farmer, and Harold Gatty the Australian, did not intend this to be a non-stop flight. In the "Winnie Mae of Oklahoma" they started out and landed just seven hours later at Harbor Grace, Newfoundland. It was from this point that they planned to set out across the Atlantic.

Had they arrived at Chester, England five minutes earlier than they did, they would have created a record for this leg of the trip. As it was they consumed 16 hours 17 minutes.

From Chester they rushed onward to Berlin, thence to Moscow and Novo-Sibirsk. June twenty-seventh found the intrepid adventurers at Irkutsk, halfway mark in their itinerary, and a short while later, coming down at Blagovyeschensk, they encountered trouble for the first time. After being mired in mud for 14 hours they finally were towed out.

Off again, they continued on to Khabarovsk where they hesitated before attempting the hazardous crossing of the Bering Sea. Fate, luck and flying skill being in their favor, they reached Edmonton, British Columbia, Canada without mishap. From here they flew to Cleveland and finally reached New York on July 1. They had been "out-of-town" 8 days, 15 hours and 51 minutes! Meanwhile they had covered 15,400 miles!

Models Designed the American Way

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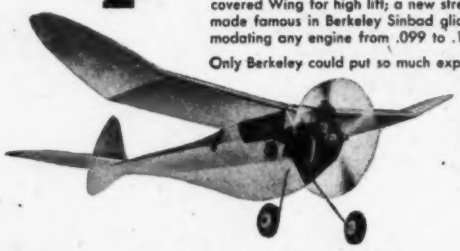

Here is the high-climb contest design, completely re-engineered aero-dynamically and structurally. Balsa-Veneer covered Wing for high lift; a new streamline tail for low drag; a fuselage employing the keel-crutch construction made famous in Berkeley Sinbad gliders; a removable engine and ignition track for easy accessibility, accommodating any engine from .099 to .19, radial or beam mounted.

Only Berkeley could put so much experience and so much value in one model design. For contest work with a .19 Engine, it gives top performance; with a smaller Atom or Arden .099 Engine, it is an ideal sport flyer.

The kit includes everything to build the model, except the power plant: Printed out Wood Parts; Formed Landing Gear; Sponge Rubber Wheels; Plastic Windshield; Cement; and the new Berkeley detailed plans featuring "Phantom" step-by-step construction drawings.

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58" Wingspan—For .19 to .35 Engines

Here is a model designed primarily for beginners. It was the only gas model approved by the Air Youth of America for educational work. It is a simple model, that can be built in 8 hours or less. It is easy to adjust and fly. So easy to fly that Brigadiers have been used in free flight formation flying.

Look what happened:

At the recent Westchester meet, against a field of nearly 300 entrants, 15 year old Bob Kress, entering a major contest for the first time with two Brigadier "58's" won first in class "A," first in class "B," was Junior High Point Winner and made the highest time of the day in all categories!

The model is designed to take a "35" engine yet with an Ohlsson "23" and "19" and Bantam "19" it has been averaging better than six minutes on a 20 second motor run. We know that you will have a lot of fun with the Brigadier. The kit is complete with printed out wood parts, cement, celluloid, formed wire landing gear, plywood firewall and silkspan covering. Yet it is the lowest priced class "A-B-C" gas model on the market—only **$2.95**

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